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TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF CALIFORNIA,

DURING THE YEARS 1878 AND 1879.

SACRAMENTO:
H. S. CROCKER & CO., STATIONERS AND PRINTERS.
1879.

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REPORT OF COMMITTEE ON PUBLICATION.

THE Committee on Publication have much pleasure in presenting to its members the Ninth Volume of the Transactions of the Medical Society of the State of California, believing that in the character of the papers presented and the typography of the volume, it is fully equal, if not superior, to any that has preceded it.

GERRARD G. TYRRELL, Chairman,
F. W. HATCH,
G. L. SIMMONS,
A. B. NIXON,
G. A. SHURTLEFF,
Members of Committee on Publication.

SACRAMENTO, July, 1879.

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THE NINTH ANNUAL MEETING

OF THE

MEDICAL SOCIETY

OF THE

STATE OF CALIFORNIA.

The Ninth Annual Session of the Medical Society of the State of California was convened at Covenant Hall, on Eddy street, San Francisco, at 11 A. M., April 16th, 1879, President H. S. Orme in the chair.

The following members were present when the meeting was called to order: C. P. Chesly, San Francisco; M. Gardner, Davisville; Thomas Ross, Woodland; G. G. Tyrrell, Sacramento; A. M. Wilder, San Francisco; James Simpson, San Francisco; G. A. Shurtleff, Stockton; A. B. Nixon, Sacramento; Q. C. Smith, Cloverdale; H. S. Orme, Los Angeles; J. M. Briceland, Shasta; F. W. Todd, Stockton; J. B. Trembley, Oakland; A. E. Regensberger, Washington Ayer, Benjamin R. Swan, J. L. Meares, C. M. Bates, Henry Gibbons, Sr., R. H. Plummer, Mrs. L. M. F. Wanzer, Mrs. M. E. Bucknell, W. H. Bruner, G. J. Van Vlack, A. B. Stout, Mrs. S. E. Brown, H. Gibbons, Jr., W. F. McNutt, G. M. Freeman, G. J. Bucknall, R. M. McLean, W. A. Grover, and H. S. Baldwin, San Francisco; E. S.

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Carr, Sacramento; A. Barkan, San Francisco; H. J. Crumpton, Lakeport; Stillman Holmes, Santa Cruz; Clinton Cushing, Oakland; E. S. Meade, San Jose; W. L. Twitchell, Alameda; D. Walker, Nortonville; W. A. Washington, Merced; H. Neal, Hollister; W. B. Simonton, Oakland; J. T. Wells, Bakersfield; R. K. Reid, Stockton; C. A. Kirkpatrick, Redwood City; F. W. Hatch, Jr., Sacramento; S. M. Tibbitts, San Francisco; R. S. Markell, Cacheville; George H. Jackson, Woodland; Ira E. Oatman, Sacramento; M. B. Pond, Napa; G. L. Simmons, Sacramento; A. W. Saxe, Santa Clara; L. C. Lane, San Francisco; Miss E. A. Follansbee, San Francisco; W. P. Gibbons, Alameda; E. Grisselle, San Francisco; C. G. Kenyon, San Francisco.

The Society having been called to order, Dr. James Simpson, Chairman of the Committee of Arrangements, read the following address of welcome to the members and delegates:

MR. PRESIDENT, LADIES AND GENTLEMEN OF THE MEDICAL SOCIETY OF THE STATE OF CALIFORNIA: The departure for the East a few weeks ago of the gentleman selected as Chairman of the Committee of Arrangements, imposes upon me the pleasing duty of acting the part of welcome, and extending to you, one and all, a cordial and hearty greeting upon this occasion, the commencement of the Ninth Annual Meeting of the Medical Society of the State of California. The profession of this metropolis bid you welcome, and gladly embrace the opportunity of becoming more intimately acquainted with their brethren from a distance.

The Committee of Arrangements, in welcoming you to the City of San Francisco, and inviting you to convene in this new and spacious hall, feel that they are removing you from some of the old and familiar landmarks hallowed by association, and remembered by pleasing reminiscences of former conventions. They feel assured, however, that the improvement will be sufficiently obvious to cause the change to meet with your approval.

We welcome you to the full enjoyment of that freedom

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which your presence here indicates, and the necessity of which you, as medical practitioners, can so well appreciate—freedom from your daily, weekly, yearly round of drudgery and toil, with its accompaniment of anxiety and annoyance—freedom from the hard and beaten track of routine, for a day or two at least, to enjoy the gratification of exchanging greetings and comparing notes with old friends, renewing former associations, and commenting upon the present and future prospects of our profession.

Apart from the value of our annual gatherings in cementing the bonds of fellowship, we shall enjoy the still greater advantage of listening to the most proficient amongst us detail whatever discovery or improvements their investigations or experience has taught them during the past, thereby placing us in line with the march of improvement, and stimulating us to the higher degrees of proficiency demanded by the progressiveness of our science. While the spirit of progress tends to carry us forward, upon this, the ninth anniversary of our reorganization, it may not be amiss to take a rapid survey of our position, and the degree to which we have prospered—that we have prospered is manifest in the increasing interest in our annual meetings, the yearly addition to our membership, and the superior character of the papers presented. Our published volumes of transactions compare favorably with those of our sister Societies in older States, and embody facts and observations in a permanent form, peculiar to our topography and climate, which would never have been recorded had it not been for the existence of the Society. By the passage of the medical law, we are constituted not only the legal guardians of the regular profession, but to us is confided the still higher duty of protecting the public from deception and fraud from empiricism and quackery. We stand at the portals, and can refuse admittance to all who are deemed unworthy. The public has now learned to recognize this fact, especially in Court, that any person assuming to be a regular physician, and practicing medicine without a license from this Society, is doing so without authority and in an illegal manner.

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To-day, this Society is the exponent and authorized representative of its licentiates, numbering over one thousand members of the regular medical profession, and including within its ranks graduates of every medical institution in the known world.

But, ladies and gentlemen, to return to the matter more immediately in hand—the regular business of this Society. The Committee of Arrangements have issued and sent to each member of this Society a programme, composed of such material as they had received; anxious to have it reach you in advance of this meeting necessarily leaves it somewhat incomplete.

The San Francisco Medical Society, though advancing in years and growing in conservatism, is exceedingly desirous of enacting the part of host, and cordially invites you, one and all, individually and collectively, to an entertainment at the Baldwin Hotel, prepared under the supervision of a committee especially selected for their well known ability as caterers. And now, with words of warmest welcome to you all, with the sincere desire and confident expectation that the session about to commence may broaden the thoughts and brighten the perceptions of every individual present, as well as inure to the permanent benefit of the profession to which we have devoted the labor of our lives, I close.

Upon motion, the address was referred to the Committee on Publication.

The Board of Censors reported the names of the following gentlemen as eligible for membership:

NAME.	SCHOOL.	DATE.
George E. Reynolds	University of California	1877
Edwin A. Matson	University of Virginia	1871
Mary K. Curran	University of California	.....
Charles Augustus Ruggles	Vermont Medical College	1854
M. Reinhart	University of Louisville	1870
John Leffler	Medical College of Pacific	1874
Henry St. George Hopkins	University of Pennsylvania	1855
J. O. Hirschfelder	University of Leipsic	1876
David Walker	University of California	1874
Charles F. Miller	University of California	1874

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The report was received and the applicants elected.

The Censors reported that J. H. Lewis, of the Jefferson Medical College, had not complied with the rules of the Society, and action had been deferred. The gentleman was invited to attend the sessions of the Society.

Dr. Bouchey, of Alameda, who is not a member of the Alameda Society, represented to the Censors that he had not been justly treated by said Society. The case was referred to the Alameda delegation, and the gentleman invited to a seat in the convention.

Dr. A. H. Adams, of Osaka, Japan, was introduced by Dr. Tyrrell to the Society, and was invited by the President to a seat in the convention.

A communication from the State Medical Society of Colorado, introducing Dr. Lansing, was read, also a letter from his brother, announcing the sad intelligence of Dr. Lansing's death, and inviting the members of the convention to his funeral, which was to take place in the afternoon. On motion of Dr. Cushing, the communications were placed on file, and the Secretary directed to so inform the relatives of the deceased physician.

Dr. Orme, President of the Society, then delivered the annual address, which, on motion, was referred to the Committee on Publication.

A communication was read from Dr. J. H. Johnson, of Havilah, stating that his certificate to practice medicine was denied by the Board of Examiners, on account of the bad standing of his alma mater, Keokuk College, Iowa, and prayed for relief. On motion, the matter was referred to the Board of Censors.

On motion, the meeting adjourned until 2 P. M.

AFTERNOON SESSION, APRIL 16TH, 1879.

The Society was called to order by the President, at 2 P. M.

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The minutes of the morning session were read and approved.

The resignation of Dr. Geo. Hewston was received, and on motion of Dr. Stout, it was ordered that Dr. Hewston be solicited to withdraw his resignation, and that the Secretary be instructed to communicate the wish of the Society to Dr. Hewston.

The Board of Censors reported the names of the following gentlemen, as eligible to membership:

NAME.	SCHOOL.	DATE.
W. T. Lucas, Woodland	University of Pacific	1876
David Huber, Gilroy	Louisville Medical Institute	1841

The Board of Censors, to whom was referred the appeal of Dr. Johnson, beg leave to report that they cannot act upon it without a hearing of the parties, and that such a hearing cannot possibly be had at the present time. They therefore recommend that the case be continued until the next annual session.

The report of the Board was adopted, as read, and Drs. Lucas and Huber were duly elected to membership.

Dr. W. P. Gibbons, Chairman, read the report of Committee on Indigenous Botany.

On motion, it was referred to the Committee on Publication.

Drs. Oatman, Saxe, and Gibbons made some interesting remarks upon the facts advanced in the paper.

Dr. Ayer moved that Dr. Gibbons be authorized to furnish the charts necessary to the publication of the paper at the expense of the Society, and the motion being seconded, it was unanimously carried.

Dr. Stout, Chairman of Committee on Mental Diseases and Medical Jurisprudence, read his report, which was referred to the Committee on Publication.

The Board of Censors reported the names of the following as eligible to membership, and, on motion, they were duly elected members:

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NAME.	SCHOOL.	DATE.
Wm. A. Cachot, San Francisco	University of Pacific	1864
Sarah I. Shuey, Berkeley	University of California	1878

Dr. F. W. Hatch, Chairman, presented report of Committee on Public Hygiene and State Medicine, which was referred to the Committee on Publication.

On motion, the reading of the report on Medical Education was deferred until 8 P. M.

Dr. H. Gibbons, Sr., asked the privilege to withdraw a resolution introduced last year, concerning the election of the Permanent Secretary.

On motion, the privilege was granted, and the resolution withdrawn.

On motion of Dr. Brown, Dr. W. G. Farwell, of the United States Coast Survey, was elected an honorary member.

The following resolution was introduced by Dr. Oatman, and adopted:

WHEREAS, In consequence of the silence of the profession, the regular practice of medicine is very generally characterized as *allopathy* by the secular press, by medical dogmatists and sectarians, and by the public at large, and the epithet, *allopath*, applied to its individual members through ignorance to a great extent that the name was introduced by Hahnemann to give distinction to his homœopathic dogmas; therefore,

Resolved, That we, the Medical Society of the State of California, in unison with the regular profession throughout the world, do hereby utterly repudiate the name of *allopath*, as applied to ourselves, or *allopathy*, as applied to our practice; the regular profession of medicine, knowing no sectarianism in medicine, practicing no exclusive dogma, or in any way restricting its legitimate members in the treatment of their patients, but, on the contrary, giving them the fullest latitude to use any remedy or any means whereby the welfare of the sick may be promoted, their health insured, or their lives prolonged.

The Treasurer presented and read his annual report, which was referred to a committee of three for examination,

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the committee to consist of Drs. Saxe, Simpson, and Kirkpatrick.

Dr. Oatman, Treasurer, moved that the Secretary be authorized to liquidate the note held against this Society by the San Francisco Medical Society, as he, the Treasurer, would be absent at the close of the session. Carried.

Dr. Ayer moved that the President's address be referred to a committee of three to report upon the recommendations made therein in regard to the establishment of a State Hospital for Consumptives, and a State Botanical Garden, which was carried.

Dr. Saxe, Vice President, appointed Drs. Ayer, Gibbons, and Nixon.

On motion, the meeting adjourned until 7 P. M.

EVENING SESSION, APRIL 16TH, 1879.

The meeting was called to order by the President at 7:30 P. M.

The minutes of the afternoon session were read and approved.

Dr. Ellinwood, Chairman, read the report of the Committee on Education, which, on motion, was referred to the Committee on Publication.

Dr. Ellinwood presented a paper upon Medical Text Books by J. B. McMahan, San Jose, which was also referred to the Committee on Publication.

The report of the Committee on Histology and Microscopy was referred to the Committee on Publication.

Dr. Q. C. Smith presented a paper upon the treatment of Puerperal Convulsions by Galvanism, which when read was ordered referred to the Committee on Publication.

The Committee on Publication, Dr. G. G. Tyrrell, Chairman, presented their report, which was accepted.

Dr. J. O. Hirschfelder exhibited and explained the working of the Kymographion, illustrating by experiment upon a living dog, blood pressure, and how it is effected by

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injecting into the tissues certain medicinal substances, pilocarpin, etc.

The Board of Censors presented the following names, and recommended their admission into the Society:

NAME.	SCHOOL.	DATE.
Jas. W. Blake, San Francisco	University of California	1874
M. C. O'Toole, San Francisco	University of New York	1864
W. L. Foley, Oroville	Bellevue College, N. Y.	1877

The minutes having been read and approved, the meeting adjourned.

MORNING SESSION, APRIL 17TH, 1879.

The Society was called to order at 10:30 A. M., President Orme in the chair.

The Secretary then read the following names as constituting the nominating committee to choose officers for the ensuing year:

C. A. Ruggles, San Joaquin; J. T. Wells, Kern; H. Neal, San Benito; D. Walker, Contra Costa; Q. C. Smith, Sonoma; M. Reinhart, Plumas; S. Holmes, Santa Cruz; Jas. Simpson, San Francisco; C. A. Kirkpatrick, San Mateo; J. M. Briceland, Shasta; W. A. Washington, Merced; C. C. Cushing, Alameda; M. M. Chipman, Santa Clara; A. B. Nixon, Sacramento; Thos. Ross, Yolo; M. B. Pond, Napa; H. J. Crumpton, Lake; P. B. Miller, Butte; E. B. Robertson, Calaveras.

Dr. E. H. Woolsey, Chairman, read the report of the Committee on Surgery, which was referred to the Committee on Publication.

Dr. H. H. Toland introduced some cases illustrating the effects of resection of the knee with removal of lower end of femur with the condyles. These cases excited much interest. Also, presented a successful case of cure of aneurism by ligation of external illiac. He also exhibited some specimens of urethral and vesical calculi, lately successfully removed by him.

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The committee to whom was referred the report of the Treasurer, reported that the accounts were correct. The report was accepted and committee discharged.

Dr. L. M. F. Wanzer, Chairman, read the report of Committee on Diseases of Women and Children, which, on motion, was referred to the Committee on Publication.

The committee appointed at the last session upon Medical Experts, asked further time, which was granted.

The committee appointed to report upon the recommendation in the President's address upon the establishment of a State Hospital for Consumptives and a State Botanical Garden, presented the following report:

MR. PRESIDENT, GENTLEMEN AND LADIES OF THE MEDICAL SOCIETY OF THE STATE OF CALIFORNIA: Your committee to whom was referred the subject matter of the recommendations of the President in his address, have had the same under careful consideration, and most respectfully report that they are deeply impressed with the importance and urgent necessity of having the State found and provide for its support a "State Hospital for Consumptives," in accordance with the plan of Mr. John S. Hittell, in his able paper upon that subject. Your committee are also convinced that great sanitary benefits would result from planting forest trees in different portions of the State, and that the medical profession and the public would derive many advantages and much good by having a State Botanical Garden which shall be accessible to all. That the subject may be fairly presented to the public and legislation secured upon the same, your committee would recommend that a special committee of three be appointed to endeavor to have such laws enacted as will secure these most desirable objects, believing and fully realizing that such a course is eminently in the interests of suffering humanity.

Respectfully submitted.

WASHINGTON AYER, M. D.
A. B. NIXON, M. D.
HENRY GIBBONS, JR., M. D.

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On motion, the report was accepted as read and the committee discharged.

The Board of Censors report the names of the following as eligible to membership, and recommend their election:

NAME.	SCHOOL.	DATE.
John F. Grady, Weaverville	Jefferson Medical College	1875
Chas. McQuesten, San Francisco	Dartmouth Medical College	1863
H. M. Fiske, Quincy	Medical College of the Pacific	1876

On motion, they were duly elected members of the Society.

The following communication was read from the Committee of delegates from the Alameda County Medical Association:

SAN FRANCISCO, April 17, 1878.

TO THE PRESIDENT AND MEMBERS OF THE CALIFORNIA STATE MEDICAL ASSOCIATION: The committee of delegates of the Alameda County Medical Association, would report in the case of Dr. Bushey, that about fifteen months ago Dr. Bushey applied for membership, and was rejected by a large majority, at a regular meeting of the Alameda County Medical Association, for what were considered good and sufficient reasons.

J. S. ADAMS, M. D.,

Chairman of committee of delegates from Alameda County Medical Association.

On motion, the case of Dr. Bushey was referred to the Alameda County Medical Association, to report at the next annual meeting.

Dr. Barkan, Chairman, read the report of Committee on Ophthalmology, which, on motion, was referred to the Committee on Publication.

Dr. A. S. Hudson introduced the following resolution, which failed of adoption: That a committee be appointed to report at the next annual session of the Society, upon the contagion of disease and the contagion of good health in their relation to sectarian medicine.

Dr. A. B. Stout presented the petition framed by the

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committee appointed to petition the U. S. Senate in behalf of Ex-Surgeon General W. A. Hammond.

On motion, it was re-referred to the committee.

Dr. A. B. Stout presented the report of the Committee on Laws Regulating the Practice of Medicine in the State of California.

On motion, the report was received and the committee discharged.

Dr. Oatman moved that a special committee be appointed for the ensuing year, to consider the whole subject matter of laws regulating the practice of medicine, to whom shall be referred the report of Dr. Stout, and that the committee be instructed to endeavor to secure the passage of a law restraining druggists, apothecaries and chemists from prescribing or practicing medicine or surgery, which was carried.

On motion, the meeting adjourned until 2 P. M.

AFTERNOON SESSION, APRIL 17TH, 1879.

The meeting was called to order pursuant to adjournment, at 2 P. M., President Orme in the chair.

The minutes of the morning session were read and approved.

Dr. Grindley was invited to a seat in the convention.

Dr. Thos. Green presented an interesting case of elephantiasis occurring in a young lady.

Dr. S. M. Tibbitts presented his resignation to the Society, in consideration of his age, having been fifty-five years in active practice, and asked its acceptance.

Dr. Tyrrell moved that the resignation of Dr. Tibbitts as an active member of the Society be received, and that he be elected an honorary member of the Society, which was unanimously carried.

The Committee on Nominations reported, that at a meeting of the committee held this morning, the following officers were nominated for the ensuing year:

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President—A. W. Saxe, of Santa Clara.

Vice Presidents—First, F. W. Todd, of Stockton; Second, J. M. Briceland, of Shasta; Third, C. G. Kenyon, of San Francisco; Fourth, W. A. Washington, of Merced.

Assistant Secretaries—F. W. Hatch, Jr., of Napa; Thos. Ross, of Woodland.

Treasurer—I. E. Oatman, of Sacramento.

Board of Censors—C. N. Ellinwood, of San Francisco; C. E. Blake, of San Francisco; P. Wheeler, of Oakland; G. L. Simmons, of Sacramento; C. A. Kirkpatrick, of Redwood City.

State Board of Examiners—C. M. Bates, of San Francisco; H. Gibbons, Jr., of San Francisco; C. Cushing, of Oakland; R. H. Plummer, of San Francisco; Jas. Simpson, of San Francisco; W. Ayer, of San Francisco; A. H. Agard, of Oakland.

Alternates—G. A. Shurtleff, of Stockton; H. N. Rucker, of Merced; Thos. Kelly, of San Jose.

Next place of meeting, San Francisco.

All of which is respectfully submitted.

C. CUSHING, Chairman.

Dr. Gibbons, Sr., moved that the report be received and the officers therein named be elected. Carried.

On motion of Dr. W. Ayer, the election of officers was had, and the Secretary instructed to cast the ballot in favor of Dr. A. W. Saxe, as President, and he was duly elected.

On motion of Dr. E. B. Robertson, the Secretary was instructed to cast the ballot for the remaining officers, which was done, and they were elected.

Dr. I. E. Oatman presented the following resolution, which was unanimously adopted:

Resolved, that the Medical Society of the State of California respectfully request the American Medical Association, at its next annual meeting, to memorialize the Congress of the United States to pass a law requiring the proprietors of all patent or proprietary medicines, offered for sale in the

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United States of America, on and after July 1st, 1880, to accompany each bottle, box, and package of such medicines with a printed label or circular, plainly stating all the medicinal and other substances contained therein, and their relative proportions; or to adopt some form of legislation that will accomplish the purpose herein contemplated.

Moved and seconded that Dr. W. G. Wheeler, of Boston, Massachusetts, be invited to a seat in the convention. Carried.

Dr. R. A. McLean presented a patient upon whom the operation of excision of the knee joint was performed for angular anchylosis produced by white swelling of knee. The result of the operation was satisfactory. Also, exhibited a patient, from whom he removed successfully the thyroid gland. Dr. McLean also presented a patient, upon whom he performed the operation of excision of hip joint, with useful limb resulting.

Dr. Powers presented for Dr. Wilder a patient who was operated upon for capsular cataract, with decided success.

Dr. De Witt presented a young boy, who had been accidentally shot by his younger brother. The ball entered the frontal bone near its center, and traversed the brain four and one half inches, by measure, where it remained, and still remains without any serious result following.

Dr. Gibbons, Jr., presented the report of the State Board of Medical Examiners, which was referred to the Committee on Publication.

Dr. Gibbons, Sr., Chairman, read the report of Committee on Practical Medicine, which was referred to the Committee on Publication.

The supplementary report of Dr. G. W. Davis, on the same subject, was referred to the same committee.

Dr. Gibbons moved that the case of Mrs. Sawtelle be referred to the new Board of Censors, to report to-night. Carried.

The report of Committee on Topography, Endemics, etc., was, on motion, referred to the Committee on Publication.

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Dr. F. W. Todd, Chairman, read the report of the Committee on Obstetrics, which was on motion referred to the Committee on Publication.

The paper of Dr. E. B. Robertson, on two cases of Tetanus was referred to the Committee on Publication.

The action of the Board of Examiners, in the matter of Drs. Mintie, Hastings and Czapkay, was sustained by the Society, these gentlemen having failed to appear before the Board of Censors.

On motion, the report of the committee on petitioning the U. S. Senate in favor of Ex-Surgeon General Hammond, was referred to the Committee on Publication.

The Board of Censors reported the name of Thos. B. DeWitt, San Francisco, Rush Medical College, 1872, for membership, and he was duly elected.

The President appointed the following committees:

On Medical Law—I. E. Oatman, Sacramento; H. Gibbons, Sr., San Francisco; G. A. Shurtleff, Stockton.

On State Hospital for Consumptives, and a State Botanical Garden, to petition the Legislature—F. W. Hatch, Sr., Sacramento; W. P. Gibbons, Alameda; W. Ayer, San Francisco.

Dr. E. Grisselle presented a paper upon Pelvic Cellulitis, which was referred to the Committee on Publication.

Dr. A. B. Nixon read a paper upon Esmarch's Bloodless Method, which was referred to the Committee on Publication.

The minutes having been read and approved, the meeting adjourned until 7:30 P. M.

EVENING SESSION, APRIL 17TH, 1879.

The Society met according to adjournment, at 7:30 P. M., President Orme in the chair.

A paper by Dr. A. P. Whittell, of Sacramento, on Galvanic Cautery for Distichiasis, and another on Coloboma of

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both Irides from Concussion, were read by title, and referred to Committee on Ophthalmology.

Dr. A. B. Stout desired to resubmit a resolution offered at last session.

On motion, the permission was not accorded.

Dr. J. T. Wells made some remarks upon the treatment of pneumonia by ergot combined with digitalis, and claimed for it great success, on the theory that by producing contraction of the capillaries it thereby lessened congestion. A discussion was entered into, in which Drs. Gibbons, of Alameda, Simpson and Gibbons, Sr., of San Francisco, took a part, and thought that the success claimed by Dr. Wells was as much due to the combination with other drugs as to the ergot alone.

Dr. Q. C. Smith exhibited a specimen of complete anchylosis of articulation on both sides of lower maxilla, discovered in a skull supposed to be that of an Indian. Also exhibited malignant tumor of antrum removed from superior maxilla. The specimens being the property of Dr. Boyce, of Santa Rosa.

Dr. A. B. Stout made some interesting remarks respecting the morphological character and relation of the skull exhibited by Dr. Smith.

Dr. Jas. Simpson moved that the Committee on State Hospitals for Consumptives be increased to five, which was carried.

The President appointed Drs. J. M. Briceland, of Shasta, and R. W. Murphy, of San Francisco, as additional members.

On motion, the dues of Assistant Secretaries were remitted in consideration of the valuable services rendered during the session.

The Board of Censors, to whom was referred the case of Mrs. M. P. Sawtelle, presented the following report:

At a meeting of the Board of Censors as a special committee, Dr. Ellinwood in the chair, the diploma of Mrs. M. P. Sawtelle was examined, and found to be signed by the following persons or Professors who are active members of

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the faculty of the New York Homœopathic Medical College: S. M. Kellogg, T. F. Allen, J. E. Doughty, S. Lilienthal. We therefore report adversely on her application for admission, upon the grounds of irregularity.

C. N. ELLINWOOD.
P. WHEELER.
CHAS. E. BLAKE.
G. L. SIMMONS.
C. A. KIRKPATRICK.

Dr. Orme, after some remarks, upon retiring from the chair appointed Drs. J. M. Brown and W. Ayer to conduct the newly elected President to the chair.

Dr. Saxe, upon assuming the office of President, thanked the Society, in eloquent terms, for the honor they had conferred upon him, in electing him President.

Dr. W. P. Gibbons moved a vote of thanks to Dr. Orme, the retiring President, for the able and impartial manner in which he had performed his duties, which was unanimously adopted.

Dr. W. Ayer moved, and it was carried, that a vote of thanks be offered to all the officers, for the efficient manner in which they had performed their duties.

The minutes of the session having been read and approved, the Society adjourned *sine die*.

GERRARD GEORGE TYRRELL, M. D.,
Permanent Secretary.

[After the adjournment of the Society, the members were invited to partake of a splendid banquet at the Baldwin Hotel, tendered them by the medical profession of San Francisco, under the auspices of the San Francisco Medical Society.]

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ANNUAL ADDRESS

DELIVERED BEFORE THE

CALIFORNIA STATE MEDICAL SOCIETY.

BY H. S. ORME, M. D.

TO THE MEMBERS OF THE MEDICAL SOCIETY OF THE STATE OF CALIFORNIA: The expiration of another year affords us an opportunity of again assembling for the purpose of taking counsel of one another and rendering an account of our stewardship as guardians of the public health. As your retiring President I have endeavored to conform to established custom, which requires the preparation and delivery of an address upon some theme of general interest to the members of the Society. In casting about for a subject upon which to base a few remarks I have chosen to speak of the Epoch of Preventive Medicine.

Preventive, or State Medicine, has become, in our day, a great branch of medical science. The chief difficulty which its advocates encounter, arises from the fact that the medical profession is far in advance of public opinion upon this, as upon most other scientific subjects.

"In the history of the human race, three objects of man's solicitude may be indicated: first, his future state; next, his worldly interests; and lastly, his health. And so the professions which deal with these considerations have been relatively placed: first, that of divinity; next, that of law or government; and as man often seems to love gold more than life, the last is medicine."

And this recalls to my mind an incident related to me by a medical friend as occurring in Western Pennsylvania,

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a few years ago. A young man had arrived at that age when thoughts of a profession or calling occupied his mind. As he was brought up by pious parents, he was very orthodox on the subject of religion. He reasoned, that as life was short and the soul immortal, men would pay well to be properly prepared for another and a better world. He was therefore qualified for the ministry, and after taking holy orders, was duly installed as pastor of a church, and commenced ministering to the spiritual wants of his flock. But in due time he discovered that men did not take that interest in the life beyond the grave, which, from its great importance, he had hoped they would. His salary was always behind, and the wolf often at the door. He saw he had made a mistake. Then he reasoned, if men do not care about their souls they must care for their health; for what is life or riches without health? He therefore began the study of medicine, and after complete preparation, with high hopes of wealth and distinction, he opened his office.

I need not tell my professional brethren how sadly he was disappointed. Its labors were toilsome, and its remuneration meager and uncertain. Alas! he saw he had made another mistake! But our young friend was plucky and untiring. He believed that there was something that would pay better than either. He reasoned, if men care so little for either their souls or bodies, there must be something which they prize more highly. So he came to the conclusion that it must be their property, their wealth. He therefore commenced immediately the study of law. His untiring energy, and his own thirst for wealth, soon carried him through. He opened his law office, and by devotion to business and his contests with his professional brethren, soon brought himself into notice, and was not long in acquiring a large and lucrative practice.

He often consoled himself, that he did all he could to save the souls and preserve the health and lives of his fellow men, but they were so engrossed in the acquisition of wealth that they really starved him into the necessity of abandoning holier and higher professions and choosing

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a baser and more groveling one, in order to assist them in taking care of the riches which perish.

This spirit of indifference on the part of the people is necessarily a factor in the task to which the educated physician must address himself, and patiently await the unfolding and development of a more enlightened public opinion to aid his often thankless labor. The strong arm of the law, both State and municipal, is essential to success in the undertaking of public hygienic reforms, and as the source of all law rests with the people, the work has to be begun at the bottom.

It is a noticeable fact, however, and one that is extremely flattering to the great principle of popular self-government, that the cause of Preventive or State Medicine has achieved a greater impetus in our own country than in any of the older ones.

Dr. Ackland, of England, in alluding to this subject, says: "Imperfectly as yet carried out in this country, it is more fully developed in several continental countries, and, of late, in a noble manner in the United States." These words were uttered about ten years ago, and since that time, much has been done to justify the eminent distinction awarded to our country by Dr. Ackland.

Nearly every State and Territory has its medical association, while local societies exist in very many counties and cities of the United States, the avowed object of which is, among other things, the promotion of public hygienic measures, and the general advancement of public health.

Much, however, remains to be done, and a "National Bureau of Health" is among the agents of reform most needed at the present time. An Act establishing a "National Board of Health" was introduced at the late session of the 45th Congress, and became a law on the last day.

It elicited a great deal of discussion, and was finally passed as a compromise bill in lieu of several others previously introduced. Its full text is as follows:

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"Be it enacted, etc. Section 1. That there shall be established a National Board of Health, to consist of seven members, to be appointed by the President by and with the advice and consent of the Senate, not more than one of whom shall be appointed from any one State, whose compensation during the time when actually engaged in the performance of their duties under this Act, shall be $10 per diem each, and reasonable expenses, and of one medical officer of the Army, one medical officer of the Navy, one medical officer of the Marine Hospital service, and one officer from the Department of Justice, to be detailed by the Secretaries of the several departments and the Attorney General, respectively, and the officers so detailed shall receive no compensation. Said Board shall meet in Washington within thirty days after the passage of this Act, and in Washington or elsewhere from time to time, upon notice from the President of the Board, who is to be chosen by the members thereof, or upon its own adjournments, and shall frame all rules and regulations authorized or required by this Act, and shall make, or cause to be made, such special examinations and investigations at any place or places within the United States, or at foreign ports, as they may deem best, to aid in the execution of this Act, and the promotion of its objects.

"Sec. 2. The duties of the National Board of Health shall be to obtain information upon all matters affecting the public health, to advise the several departments of the Government, the Executives of the several States, and the Commissioners of the District of Columbia, on all questions submitted by them, or whenever, in the opinion of the Board, such advice may tend to the preservation and improvement of the public health. It shall also aid in the work of State Boards of Health, and of State or municipal quarantine authorities, by such means and to such extent as may seem to it necessary or desirable. And for this purpose it is authorized to pay a certain portion of the expenses of such State Boards of Health or quarantine authorities, at its discretion; *provided*, that the amount so paid shall in no case exceed one-half the total expenses for any such Board or quarantine authority; *and provided further*, that such reports and information as may be required by the National Board of Health, shall be furnished by the State Boards and quarantine authorities thus aided.

"Sec. 3. That the Board of Health, with the assistance of the Academy of Science, which is hereby requested and

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directed to coöperate with them for that purpose, shall report to Congress at its next session, a full statement of its transactions, together with a plan for a National public health organization, which plan shall be prepared after consultation with the principal sanitary organizations, and the sanitarians of the several States of the United States, special attention being given to the subject of quarantine, both maritime and inland, and specially as to regulations which should be established between State or local systems of quarantine, and a national quarantine system.

"Sec. 4. The sum of thirty thousand dollars, or so much thereof as may be necessary, is hereby appropriated to pay the *salaries* and *expenses* of said Board, and the further sum of *five hundred thousand dollars*, or so much thereof as may be found necessary to *carry out* the *purposes* of this Act."

The yellow fever epidemic of last year has done much to attract the attention of statesmen to the importance of preventive measures, and to that newly awakened interest is probably due the foregoing Act.

It is certainly a step in the right direction; and a very important one. We already have State Boards of Health in about nineteen of the States, and are likely soon to have one in each State, which, acting in conjunction and harmony with the proposed National Board, ought to constitute a most vigilant and effective system of sanitary police during the prevalence of epidemics, and should be invested with full and sufficient authority under the law to make its mandates respected and obeyed.

The value of such medical Boards or systems in the accumulation of vital statistics cannot be overestimated.

Dr. Bowditch, the eminent leader in the great work of preventive medicine, makes the startling announcement of an estimate based on statistics which have been carefully accumulated, that there are "more than two hundred thousand human beings now slaughtered annually in the United States by preventable diseases."

In comparison with the estimated preventable deaths in England and Wales, placed a few years since at one hundred and twenty thousand, and more recently by Dr. Farr,

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the Registrar General, at one hundred and fifteen thousand, the above estimate of Dr. Bowditch is perhaps not extravagant, considering the difference of population. For every one of these two hundred thousand preventable deaths might doubtless be counted at least three or four cases of preventable sickness.

The cost to the country, direct and indirect, of a term of sickness for a million people, and the funeral expenses of one-fifth of them, is something frightful when taken into consideration with the fact that in *every case of the entire million* so sick and dying, the sickness might have been prevented by an intelligent observance of the laws of health and the principles of public hygiene.

To prevent all this waste of life and expense, to shield the sufferers from the misery and distress which it entails, to preserve the ties of family and kindred unbroken, and to keep back the widows and orphans tears, is the task to which every philanthropic physician and every lover of his kind is invited. Some idea of the great public awakening upon this important subject may be gained from the statement of Dr. Bowditch that since the inauguration of the new epoch of State preventive medicine, which he places at the date of the establishment of the first Board of Health in the United States—that of Massachusetts in the year 1869—"more practical work has been done among the people, tending to prevent or crush out disease, and more valuable papers written illustrative of public hygiene the world over, than since the Christain era began. In every State there are active and earnest laborers in the field, and their number is daily increasing."

The field of labor for this important work is vast; in fact is co-extensive with the entire spread and growth of civilization throughout the globe.

This State Medical Society, and the State Board of Health of California, have nobly met and performed their part as State organizations; but far more can be accomplished if, in every city and county throughout this entire State, earnest and harmonious local societies could

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be organized, that would take the matter in hand in their several localities. Let them first of all familiarize themselves with all existing State sanitary laws, and demand their enforcement by the proper officers.

They should further devise and prepare such additional legislation as experience in their several localities suggests as proper and expedient and circulate petitions among the people praying for their enactment.

The physicians of every State, by virtue of their intelligence and their natural guardianship of the public health, are rightly entitled to a fair representation of their profession in all legislative and municipal bodies; and the people at large would be the gainer if their experience and influence could be utilized in the framing of laws. As an almost unvarying rule, the medical profession is free from the taint of personal political ambition. No right-minded physician, of respectable practice, can accept public office without great personal sacrifice. Hence it is that a proposition to do so must be presented for his consideration, as purely upon the high ground of public duty.

The local medical societies ought to exert their influence to have certain of its members elected to the State Legislature. If such nominations were made regardless of party or political affiliations, and it came to be understood that the entire medical profession was pledged to exert its personal influence in their support, there would be little doubt of the candidate's election. Political parties would be swift to recognize such a potent element of strength. Even a meager representation of the profession is better than none. By courtesy they are placed on committees pertaining to the public health, hospitals, asylums, infirmaries, etc., and in every instance under present recollection where physicians have filled such positions they have left their influence for good upon the statute books of the State as a perpetual monument to their judgment and high appreciation of the great principles of State preventive medicine.

Hence it is that I venture to suggest, as a matter of right on the part of the profession and of the people at large,

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whose sanitary advisers they are, and as a matter of duty on the part of the physicians who consent to accept the task, that an organized effort be made on the part of local medical societies and of this State Society, to send more physicians to the State Legislature and to the Congress of the United States.

The heroic sacrifice of the profession in great emergencies, such as epidemics create, embellish the records of medicine of every civilized nation. The yellow fever scourge of last year claimed of the profession many valuable lives—the lives of unselfish men, who, "without the hope of fee or reward," save the proud consciousness of duty well performed—responded promptly to the call of suffering humanity, and as bravely took their places in the line of death, as does the veteran soldier on the field of carnage press forward and close up the gap made by his fallen comrades in the line of battle. I shall not claim the credit of a really new fact, in announcing that doctors continue to disagree. Many eminent physicians believe that yellow fever is of local origin, and hence can only be prevented by local sanitary measures. Quarantine regulations all admit to be good—for the fact that the disease is contagious and may be spread from port to port, is not denied—but it is claimed that local State and municipal laws in all infected localities, is what is needed to confine and stamp it out; and that similar laws in non-infected localities, seconded by a discriminating quarantine against ports notoriously infected, is all that is needed to prevent its introduction. Other physicians, equally eminent and distinguished, hold that the national health is of too much concern to be at any and all times entrusted to inefficient local Boards of Health, or to occasional Congressional legislation. We should and must have a "National Health Board," well and faithfully officered, and fully salaried, with abundant powers clearly defined, composed of scientific medical men, who are also expert in yellow fever. Quarantine also may give rise to a delusive feeling of security. Thorough drainage, the frequent flushing of sewers, the destruction

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by fire of all city garbage and refuse, especially rags and old clothes, and the education of the public, and especially physicians, up to the necessity of reporting isolated sporadic cases of disease which are of the least suspicious type, or likely to become epidemic, is the proper course to pursue in the line of preventive medicine. We must get at the origin of disease, go to the root of the trouble, and eradicate it. A large aggregation of human beings in a city or town will, of necessity, especially in Summer, produce disease.

The present attention of the whole civilized world is directed with painful apprehension and alarm, to the scourge of the Plague, as lately developed in Russia, along the borders of the Black and Mediterranean Seas. You are familiar with the details of its origin and spread, for every medical man, in Christendom and out of it, has doubtless made the subject a special study. My only excuse in referring to it here, is to note such measures for its suppression and confinement within the limits of its present area, as have come under my observation, and to place this Society on record as taking cognizance of the great peril to the public health which its possible spread to our country implies. Heroic treatment of the malady by the Russian government is being vigorously prosecuted, and the "purification by fire," is unstintingly applied to the hopelessly infected districts. A stern and relentless quarantine, amounting to absolute non-intercourse, has been instituted by all contiguous nations, who evince a determination to protect themselves from the fearful peril which menaces them. A military "cordon sanitaire," hems in the stricken Cossack hordes, while the "black death" does its fearful work, combated only by the brave and heroic physicians who throw their lives into the hopeless breach; and by the determined torch of the government officials, who rightly reason that it is better to annihilate whole cities in the infected regions, than to attempt milder treatment. Medical treatment of the plague so far, seems to be attended with but indifferent success. In fact it appears that but little can be done to save a well developed case of

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the malady. Preventive measures have so far proved the most efficacious. The great drawback to all treatment of the plague among the Russian peasantry lies in the unsanitary surroundings of the lower classes. Cleanliness has to be absolutely enforced, and the patient must be removed to the open air, or to well ventilated apartments. In our own country, precautionary preventive measures have already been adopted against the possible introduction of the disease by vessels cruising between the infected districts and our ports.

The late Dr. Woodworth, as Surgeon General of the Marine Hospital Service, issued a circular, approved by the President, in regard to vessels coming from ports on the Black Sea, Sea of Azof, the Mediterranean, or other places, where they are likely to be brought in contact with persons or merchandise infected or capable of being infected with the plague.

"The circular is in accordance with the provisions of the Quarantine Act of April 29, 1878, and after calling attention to the existence of the plague, and its dangerous character, instructs officers of the customs, medical marine officers, and quarantine officers generally, that, until further orders, no vessel from the ports indicated, conveying any rags, furs, skins, hair, feathers, boxed or baled clothing or bedding, or any similar articles liable to convey infection, shall enter any port of the United States until the articles have been removed and the vessel thoroughly disinfected and ventilated. The suspected articles are also to be disinfected or burned as the Surgeon-General may determine in each case. In view of the Muscovite immigration, and the frequent importation of the articles named, from the ports near the infected districts, these regulations seem to be highly proper and should be strictly enforced."

The quarantine and health laws which are likely to be instituted under the Act of Congress just passed for the prevention of the introduction and spread of contagious and infectious diseases, will be an efficient means of guarding against the introduction of the plague. The London *Times*

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of Feb. 27, last, reports a meeting on the evening of the 26th instant, of the Epidemiological Society of London, to consider the subject of the plague. Many distinguished medical men were present, and papers were read, giving the latest obtainable data upon this all engrossing subject. Dr. E. B. Dickson, the physician to the British Embassy, Constantinople, contributed a paper relating to the pathology and etiology of the disease. It began to appear in the Autumn, continued through the Winter, and reached its acme of intensity in the Spring, and died out suddenly during the Summer season. The range of the thermometer during the prevalence of the disease was from 5 to 35 degrees. Between 30° and 45° the epidemic began to diminish. The symptoms—its glandular swellings, attack of carbuncles, sanguineous diarrhea, convulsive shakes—were described in detail; and in regard to treatment, nothing was suggested, but the fact was noted that in no instance on record was an attack of plague ever cut short by the use of quinine. Dr. Cabiadis, who had had much personal experience, held that the atmosphere which surrounded a person affected with the disease, was the true medium of transmission, and that the clothing and bedding communicated the malady. Dr. Dickson acknowledged with regard to the etiology of the disease, that its origin was utterly unknown. The proximate cause which predisposed an individual to an attack was poverty. It was styled "*miseria morbis.*" The poor were often attacked, the rich hardly ever. The prophylactic measures to be taken, were the isolation of the sick, the destruction by fire of their clothes, the white-washing with lime, and the free ventilation of their domiciles. The "*cordons sanitaire*" were valuable in checking the extension of the outbreak of the plague. The analogy of the plague to typhus was noted, and the opinion expressed, that England was prepared to deal with any amount of plague, if the disease should chance to appear in that country.

It is perhaps worth our while to inquire, whether the presence and unsanitary habits of the Chinese on this coast,

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is not to be feared, as a possible incentive to plague. We know to them is largely due the continuance, if not the originating, of the severe and terrible epidemic of variola we had on this coast several years ago, and may we not fear that these same "heathen Chinese" may at any time introduce and spread in our midst that awful and dreaded disease, leprosy.

The adulteration of food has attained alarming magnitude, and is really a source of greater danger to the people of this country, because already fastened upon us, than the apprehended visitation of the plague. An evil that can be made pecuniarily profitable, that challenges the cupidity and avarice of men, is extremely difficult to combat. It is not easy to conceive of a possible motive strong enough to induce even the vilest of men to deliberately encourage the introduction of a contagious disease into any community, but the adulteration of both food and medicine has become so profitable, and I may say, so popular, that men engage in it as though it was really a legitimate and respectable business.

A recent paper by Dr. Geo. S. Angell, read before the American Social Science Association of Boston, and published in the March number of the New York "Sanitarium," is a most startling exhibit of the diabolical acceleration which is being made in this infamous art. It quotes the Scientific American as authority for the statement, that probably half of the vinegar sold in our cities is poisonous; says that a Boston chemist analyzed twelve packages of pickles, and found copper in all of them. "Flavoring oils, syrups, jellies, and preserved fruits, contain poisons. Coffee, tea, cocoa, and chocolate, are adulterated with various substances." Several mills in New England are engaged regularly in the business of grinding white stone into a powder expressly for use in adulterating flour, sugar, confectionery, starch, and the hundreds of other products of flour and sugar, and other white substances, such as cream of tartar, soda, baking powders, corn starch, and other fari-

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naceous foods. "Terre alba," or white earth, is another substance very commonly used in food adulterations.

Recent investigations made by Dr. Raymond for the Brooklyn Board of Health, of ten samples of "baking powders," from as many large New York manufactories, revealed in all, except one, large quantities of alum, a substance known, when so mixed, to be very deleterious and productive of dyspepsia.

In 1874, a "medical commission" of five physicians, appointed by the Board of Health of Boston, reported that over a million and a half of gallons of water were sold as milk in that city in that year, for which nearly $500,000 in money was paid. The water was liable to have been taken from barn yard wells, and impure streams contiguous to such yards, and probably was so obtained, causing typhoid fever and other infectious diseases. In one instance, thirty-four cases of typhoid fever were produced in twenty families by drinking milk mixed with water taken from a well standing near a cesspool. Other methods of adulterating milk, besides the use of water, are enumerated, formulas for which may be purchased from all milkmen by new ones engaging in the business, on payment of the required sum in cash. The writer is assured, upon what he regards as reliable authority, that thousands of gallons of so-called milk have been, and probably are now being sold, in the good city of Boston, which do not contain one drop of the genuine article.

In the matter of "oleomargarine," the adulterators were not satisfied to make "butter from bulls," or from the pure suet of freshly slaughtered bullocks, but have found a method of even further adulterating it with an article still cheaper than beef suet. It is estimated that in the year 1877, there was manufactured in this country about seventy-five million pounds of this "butter," and forty million pounds of cheese from this same material. In 1878, the butter thus manufactured is placed at over forty-five thousand tons. Analyses of these compounds have revealed horse fat, fat from bones, common candle grease, and similar

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fats, and the whole prepared with a heat insufficient to kill the parasites which enter and breed in human bodies.

The adulteration of medicines, wines, and liquors, is quite as bad. California and Kentucky, famous for their wines, brandies and whiskies, have, according to this writer, fallen victims to the insatiable avarice of the adulterator, and their vinous and rye products are under suspicion. California wines, it is claimed, are now made, or rather remade, in Boston cellars, and the adulterated article, made at a cost of less than ten cents per gallon, is put on the market with well known American and European brands on the bottles.

The Louisville *Courier-Journal* is quoted as stating that more than nine gallons out of every ten now sold as brandy and whisky, are made out of a vile compound of whisky swill, distilled spirits, and chemical abominations, and adds: "If the world knew what villainous stuffs brandy, whisky, and wines are made of, the present crop of drunkards would be about the last."

Even tinware and other cooking utensils are, in the language of a Harvard University chemist, "alive with poison." The enamel of "marbleized ironware," so popular in coffee pots, saucepans, milk pans, teapots, etc., is composed largely of oxide of lead in soluble form. The same thing has been found in tinware, and reported on by the Michigan State Board of Health, and by Dr. Emil Querner, of Philadelphia. This evil of adulteration has become so extensive and unendurable all over the country, and particularly in New York, that a determined effort is being made there by the medical profession to stamp it out by vigorous legislation. Dr. Squibb, after giving the subject careful attention and study, has drafted a bill which it is hoped the New York Legislature will enact into a law. Legislation upon the subject is as necessary in California as in New York. Indeed, every State and Territory ought to deal peremptorily with this evil. To what nobler end can our statesmen direct their talents than to the protection of the public health? It has been truly said by an English

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prime minister: "That the health of the people is really the foundation upon which all their happiness and all their power as a State depends."

The planting and culture of forest trees, and the protection and consequent preservation of our large tracts of primeval forests, is a subject every way worthy of our attention. If we are to accept as true the charges of wanton destruction of our native timber which are being almost daily made by the press of the State, there is indeed cause of alarm. There can be no question as to the beneficial influence of forest, in extent at least, to that with which this State is at present supplied, upon climate and the public health. The alignment of our mountain crests with heavy timber is a wise and beneficent provision of nature for the retention of the snows of Winter, which gradually melt through the Spring and Summer months, and thus supply the plains and valleys below with pure water for the uses of civilization, both in cities and in rural districts. The planting of forest trees both for health and general utility, is equally commendable with the preservation of existing forests. A general interest has of late years been developed in the cultivation of the Australian gum trees, and the movement has met with the approval and encouragement of the medical profession; first, on the ground that the planting and growing of any sort of tree was better than none at all; and second, because of their known or admitted influence in abating the malarial tendencies of any region thus affected.

It is perhaps equally or more desirable that the experiment of growing the cinchona tree be tried in this State, and I feel confident that it would be productice of even better results than have been acheived by the *eucalyptus globulus*. There are several varieties of the cinchona tree, but all are known to thrive in any region or section of country where a nearly even temperature prevails throughout the year, where it is neither too hot or too cold, and where the young plants can be protected from the direct rays of the hot sun. The Dutch and British governments have made

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successful attempts to introduce and acclimatize the cinchona tree into their East Indian possessions, in Java and various parts of Hindoostan, where the mountainous regions furnish the necessary moisture and temperature for their growth. More or less successful attempts at cinchona culture have been made in Jamaica, Brazil, the Azores, and Algeria.

Many claim that cinchona culture can be successfully prosecuted in some portions of the United States. And if I mistake not, an effort was partially made to introduce this tree on this coast several years ago, but of the final result I am in doubt. I think, however, that the sheltered regions of our foothills afford the conditions requisite for success; almost absolute freedom from frost in Winter, and not too hot in Summer. It is an experiment at least worth an intelligent and fair trial.

And this leads me to speak of the formation of a State Botanical Garden, in the interests of medicine and general science. Other progressive countries are in advance of us in this respect. Melbourne has a botanical garden which would do credit to any long settled nation of the world. To the medical profession of the State, an opportunity of examining and studying the various articles of the vegetable materia medica in the different stages of their growth, is or ought to be an object of highest value.

A State Medical Library is a great desideratum in every State. Its advantages need scarcely be enumerated here, to magnify its importance. The literature of the profession has become so vast and varied, and is increasing in quantity and quality at such a rapid rate, that no individual physician, unless possessed of an ample fortune, can keep his private library supplied with all the valuable works. If a State library could be accumulated in San Francisco, embracing every work of recognized value, and kept constantly supplied with new publications, on subjects pertaining to medical science, its value would be soon apparent in the diffusion of knowledge among the profession, to be in

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no other manner so readily obtained. Provincial physicians would more frequently visit the city, in order to avail themselves of its advantages, and in so doing would have the additional benefit of a familiar intercourse and council with distinguished members of the profession residing here.

I desire to call your attention to the subject of the regular appointment of delegates to represent this Society in the American Medical Association. It is one of the oldest and most notable of the strictly professional organizations of America. Instituted in 1847, its experience and records embrace a period of nearly a half century of the most valuable medical history of the country. Its influence has always been exerted in helping forward the course of State preventive medicine, while of late years it has made definate exertions in that direction. The intermingling of men from all quarters of the Union, at its annual meetings, naturally contributes to the achievement of good work to that end. So large and important a State as our own, it appears to me, ought regularly to be represented in that body. It publishes annually valuable papers relating to State medicine, epidemics, climatology, etc., and their influence on the general public, especially upon intelligent persons, who are examining the subject of a healthier locality, with a view to a change of residence, is doubtless very considerable. As the climate of our State is worthy of all possible commendation and eulogy, the opportunity of setting forth its superior advantages through the medium of the published papers and reports of the American Medical Association, ought not to be lost.

There is another subject of a general nature, which might well demand your consideration. It is the establishment of a State Hospital for Consumptives. This matter was recommended to the Legislature in the last biennial report of the State Board of Health, by Dr. Gibbons, Sr., President of the Board, and has been enforced more recently, by Mr. John S. Hittell, in an able paper published in the Pacific Medical Journal. It is a subject of importance in several points of view, but my limit on this

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occasion permits me only to recommend it to your attention.

And this brings me to the consideration of an important matter in relation to increasing the interest in the meetings of our State Medical Society, and upon which action would be advisable.

As is well known to us all, many of the papers which are read at our annual meetings, present topics suitable for discussion, and lose much of their value by being passed over in silence. There ought to be a given amount of time allotted to this purpose, and it might be proper to limit the time occupied by each speaker.

Another method of extending the interest taken in the proceedings, would be the presentation of certain inquiries in regard to the diseases and climatic relations of different sections of the State, such inquiries to be answered verbally by members representing the different sections. Each county might be called on in turn to respond, or the members from each county by name. The questions might relate, for instance, to the prevalence of epidemics, or endemics, or of malarious disorders, or typhoid fever, or the highly important subject of climate and localities adapted to invalids, and especially those invalids suffering from or threatened with disease of the pulmonary organs. The medicinal qualities of the mineral springs so abundantly scattered throughout the State, together with the sanitary conditions of their respective localities, might be made the subject of this method of inquiry. By such means, information of great value would be accumulated and placed on record.

The Medical Law, known as the "Anti-Quackery Act," has proven to be a valuable auxiliary in the cause of legitimate medical practice in this State. By its limited enforcement, a large number of notorious quacks have been driven from the State. Unfortunately, however, as is well known to many of you, another suit, involving the constitutionality of the law is now pending before the Supreme Court, and we are still waiting upon the "law's delay," with such

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patience as we can command, hoping nevertheless for a speedy decision.

No stronger proof of the value of such a law can be adduced, than that it meets the approval of a majority of the leading medical men of the Union.

We have just heard that the medical profession in Kansas have induced the Legislature of that State to pass almost identically the "Medical Act," as it now stands on the statute books of California.

A late leading Indianapolis paper thus alludes to the enforcement of a similar law in Illinois; it says: "Indiana has long been the paradise of quacks. Indianapolis, as the capital of the State, is cursed with the most and the worst of them. Since the passage and pretty general enforcement of the "Medical Practice Act," in Illinois, fourteen hundred quacks have been driven out of that State, and most of them have come to Indiana, where they are free to rob and murder at their own sweet wills. The Legislature has been called upon to protect the community, but it hesitates and falters. There is in this city a quack, who has murdered at least half a dozen patients by his gross ignorance of even the rudiments of a medical education, and the amount of money of which he has defrauded the public would build and endow a medical college."

Our Board of Examiners will submit a report of the work they have done this year. Speaking for the Society, I have one suggestion to offer for their consideration; it is, that the members of our "Board of Examiners" should be selected with care and judgment. The necessity no longer exists for them to be chosen to represent certain sections of the State. They should be selected because of their natural fitness for, or adaptability to the position, and their energy and availability. As frequent conferences are often necessary to secure the most effectual administration of the law, the Board should be so constituted as to permit the holding of meetings at which a majority of its members could be present, at a few hours notice; hence, four members should

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be residents of San Francisco and Oakland or their immediate vicinity.

A great many matters of importance requiring immediate action, might thus be arranged without necessitating the attendance of distant members, and in this way unnecessary absence from professional business be avoided by such members, and the expense of their attendance (by no means an unimportant item), be saved to the Board and to the Society. It is to be hoped that no one not in full sympathy with the spirit of the law, and ready to aid energetically in the enforcement of its provisions, will be chosen, or will accept a position upon the Board.

The finances of our Society are not in a flourishing condition, to say the least. The Treasurer will submit to you his annual report, and will no doubt offer such suggestions as his experience in the administration of our finances may seem to warrant. We ought to get out of debt at once, and keep out. We should raise just money enough each year, whether by assessment or otherwise is immaterial, to pay current expenses, and no more. Let us pay as we go. If it should be deemed advisable this year to invite the contributions of prize essays, let us raise the money by assessment to fund the prizes. I have no doubt that we would find, in the rich result, that our money had been well invested.

During the past year, the dread archer, Death, has flown his fatal shafts into our ranks with unerring aim and insatiate greed. He has claimed those who were in the prime of their manhood and usefulness; he has come as the red-handed assassin, and cowardly plunged his fatal dart into the vitals of his victim; and again as the silent messenger, stealing unbidden into the sick chamber, and beckoning to the weary invalid to follow. We shall sadly miss the fallen who have been gathered hence. Dr. H. P. Babcock was an old and valued member of our Society, and at the time of his death, was President of our State Board of Medical Examiners. The other deaths were Drs. Wayman, Chase, Crook, and Mehring. All active and esteemed

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members. Our Committee on Necrology will doubtless mention them befittingly.

My friends, in returning to you the wand of authority placed in my hand one year ago, I must express my gratitude for the flattering opinion of my humble abilities which the selection indicated. To be chosen to preside over a society composed exclusively of educated men, engaged in the arduous task of investigating scientific subjects, and in the general advancement of human knowledge, is a distinction which ought to challenge the gratitude and pride of any man. I have not been indifferent to this sentiment, and have endeavored to appreciate the importance and dignity of the position, and trust that I have not erred in assuming that I may justly claim your indulgence and charity, in whatever I have failed to meet your too generous estimate of my abilities.

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REPORT ON PRACTICAL MEDICINE.

BY H. GIBBONS, SR., M. D., CHAIRMAN OF COMMITTEE.

An annual report on practical medicine, from a standing committee appointed for the purpose, might be supposed to require a presentation of the last year's progress, changes, and improvements in that department, both in our own and foreign countries. Shrinking from a task so weighty, I have thought my brethren of the Society would prefer something like the results of my observations and experience during eighteen years of hospital practice in San Francisco, as visiting physician, first of St. Mary's Hospital for six years, and afterwards for twelve years of the City and County Hospital. This account will be drawn partly from notes and partly from memory; for I confess to the almost universal fault of medical practitioners, the failure to make and keep written records of professional work from day to day and from year to year, as ought to be done with regularity by every practicing physician.

It is scarcely necessary to premise that hospital patients do not present an average representation of the diseases of a community. They come largely from the ranks of the poor and destitute. Many have constitutions broken down by abuse and intemperance. The mental stimulus to recovery in a charity hospital is wanting in a great proportion of inmates, who prefer sickness in a hospital home, to health in a world of strife and toil. In no other place is this more conspicuous than in California, where so large a number of the inhabitants are isolated from family and adrift in the world.

Besides, the inmates of hospitals in California are mostly

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men. Few women comparatively enter the wards, and scarcely any children.

Most prominent in the list of diseases, as to the number of its subjects, is pulmonary consumption. The victims of this malady flock to San Francisco from all parts of the State. In many instances they are in the advanced stage and come only to die. They never enter in the early period, when a chance of cure exists. By far the largest number are natives of Ireland. One would suppose that the change in the mode of life in coming from that country to this, the increased comforts and means of health, the nutritious animal diet, would fortify them against the invasion of phthisis. But the reverse appears to be the rule. This circumstance I have remarked for many years, until the conclusion has forced itself on my mind that the transition from a rugged mode of life with simple fare and much exposure, to the comforts and luxuries of a higher civilization, is a hazardous experiment on the human constitution. We observe it particularly in the native Indians, who, when transferred from their wild life to the domestic service of the white population, become remarkably sensitive to the causes of disease, and when taken sick, succumb almost invariably and without exhibiting any power of resistance. When I find an Indian in the hospital ward, I very generally expect him to die, particularly if he has the slightest pulmonary disease. The same observation holds good, though not to the same extent, in regard to native Californians of mixed Spanish and Indian blood.

The white American race are less prone to pulmonary disease. A very small proportion of this class find their way into the hospitals—indeed a small proportion from any and all diseases. In private practice, I think the same condition occurs—that is to say there is much less tendency to pulmonary consumption among native Americans than foreigners. I am sure this has been the case within my own observation, during the twenty-nine years of my practice in California. Transplantation of Americans from the Atlantic

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States to this coast, certainly has not the same effect as transplantation of the Celtic race.

It is remarkable with what frequency the progress of phthisis is arrested when patients enter the hospital, even when they have but recently come from a climate much more congenial than ours. In quite a large number of cases they improve so far as to be able to leave the house and go to work. But such patients generally return in a few months. A still larger number remain with scarcely the slighest change other than temporary exacerbations, for one or two years, or even longer, sometimes improving slightly in the long run. This was notably the case with three patients in the county hospital, lately occupying three adjoining beds, and who had been in the wards for three years. They all declared that they were no worse than three years ago. In all these cases both lungs were studded with tubercles and contained cavities.

So far as relates to the prospect of cure, pulmonary phthisis, except in the very early stages, scarcely requires consideration. But no disease imposes on our profession more important duties. Before us is a fellow being under sentence of death—a death not to be accomplished at a blow, but only after a long course of torture, years it may be, in which suspense, hope and despondency are variously intermingled with physical suffering. The humanities of our profession, if nothing more, demand the interposition of all possible agencies to alleviate pain and console the drooping spirits, and spread comforts around the victim in his downward journey. This service is due also on behalf of the afflicted relatives. I mention this subject because it is too much the custom to regard our services as due only to curable patients, and to abandon to their fate those hopelessly sick.

There is one point in the treatment of all diseases which should never be lost sight of, viz: to give the patient a comfortable night, if possible. Night without sleep is always torture to the sick. Cough and night sweats are the two great hindrances of repose to the consumptive.

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For some years past I have been in the practice of depending largely on digitalis to allay coughing, adding it to such mixtures as are in common use, composed of expectorants and opiates. ℞—Tinc. belladonnæ ʒ ij; syrup. scillæ ℥ ij; sulph. morph. gr. iv; syrup. tolu ad ℥ iv; M. sig: A teaspoonful at bed time, repeated if necessary. The proportions of morphia, etc., to be varied according to circumstances. In old and enfeebled cases, it should be combined only with anodynes. Of the value of digitalis for this purpose I am fully assured.

For night sweats, there is nothing equal to belladonna or atropia. A pill of oxyd. zinci, gr. ij and ext. hyoscyami gr. iv, is often effectual. But half a grain of ext. belladonnæ added to it forms the most efficient agent for the purpose I have ever tried. If it should not prove effectual in that proportion, the quantity of belladonna should be increased. Atropia, in pill or hypodermically, is highly recommended by recent authors. The ancient remedy of aromatic sulphuric acid is also useful. A Dover's powder will often *prevent* sweating and procure a good night's rest. The dose should be fifteen grains. I never think of giving a smaller dose to an adult.

It is worthy of note that the night-sweats are not only arrested by the treatment referred to, but that they seldom return when the remedies are withdrawn. In the two wards under my charge there are commonly about twenty-five cases of phthisis in the confirmed or advanced stages, and not more than one or two of them at any given time have nocturnal sweats. The same may be said of hectic fever. At the present time there is not a well marked case of hectic in the wards. Occasionally a patient complains of having had a chill or chills. Here a few anti-periodic doses of quinia or cinchonidia put an end to the trouble.

It is a matter of importance in the treatment of cough, night-sweats, etc., to change the prescription frequently. All medicines are liable to lose their effect by continued use. Everybody knows this, and yet the knowledge does not appear to be sufficiently acted on by practitioners. In

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chronic diseases of almost all kinds, changing the medicine occasionally so gratifies the patient that there is healing virtue in the mere change. It is a common fault to adopt definite formulas in practice, and to adhere to a routine course. But he is the most successful practitioner who prescribes for each case by itself, and who modifies his prescriptions according to effects and circumstances.

Pain is a common attendant of pulmonary and bronchial diseases. It may be pleuritic or it may be muscular or neuralgic. Within a few years past, I have returned to the old-fashioned method of treating such pains, which I had almost abandoned in obedience to fashion: *i. e.*, cupping, and counter-irritation by mustard, croton oil, antimonial ointment and blisters. Dry cupping and blisters have the preference. Where there is objection to the soreness of complete vesication, the blister is kept in place only two or three hours and a poultice applied. Every day as I pass through my wards, some of the patients ask me for a blister. So far from complaining of their pain, there is no appliance so welcome. The relief afforded by them is marked.

Hemorrhage is by no means a frequent accompaniment of phthisis in the hospital, nor is it generally followed by an aggravation of disease. On the contrary, in a large proportion of cases there is a decided improvement after a moderate discharge of blood. Again and again I have witnessed this, the improvement sometimes being almost permanent. Venesection was formerly employed as a remedy in pulmonary consumption, and often with reputed benefit. I well remember when it was in universal use for hemoptysis, and I can look back to individual cases in the early years of my practice, when I bled the same patient time after time on the return of hemorrhage, with manifest relief to the distressed lungs. Dr. Rush employed venesection in advanced stages of phthisis to relieve the oppression and suffering, and his patients, according to his statement, were much comforted by the loss of blood without an apparent shortening of life. In these cases he called it the "Anodyne of Death."

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Among the drinks employed is *dilute phosphoric acid*, used at the pleasure of the patient to acidulate the water. It will occasionally give permanent relief from the most annoying thirst. Cod liver oil is employed habitually, and the patients are allowed to take it in any manner they please. Some succeed best with it unmixed, while others find the combination with creosote to agree best with the stomach. The mixture of cod oil and iodine is sometimes productive of good.

Within a year or two, extract of malt has been introduced largely in practice, both in Europe and America, as a concentrated nutrient, supposed to possess an extraordinary physiological adaptation in a large number of chronic disorders requiring the most perfect nutrition of the blood. It has been used quite extensively in some of the wards of the hospital, and in a number of my cases with excellent results. But I must confess not to have observed so much benefit arising from it as some writers have represented. Its combinations are various, for instance with cod oil, iodine, the hypophosphites, etc. I regard it as quite equal to any form of fermented or spirituous drink.

The drinks last referred to are employed in my wards only in moderate quantities, and in the last stage of disease, and more for the gratification of the patient than with any expectation of benefit. The whisky treatment of pulmonary disease, both in hospitals and private practice, I have observed with some degree of attention and interest for many years. But I do not hesitate to declare that the cases of benefit from it which have come under my notice, have been exceptional and rare. In the large majority of hospital patients, the disease has been developed during the free use of alchoholic stimulants, and under circumstances which would warrant the conclusion that alcohol, so far from preventing, had aided in producing it. Some two years ago, owing to the exhaustion of the hospital fund, the supply of liquors was suddenly cut off for a week or two. A number of my patients, perhaps eight or ten, in the last stages of consumption, were getting from four to six ounces

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of whisky daily. I expected some of them to die from its sudden abstraction, but to my surprise they exhibited no bad results, but waited patiently and unharmed until the stream should again flow in its wonted channel. But my experience on that occasion detracted from the low estimate I had already formed of the value of alcohol as a supporter of life.

A preparation has been recently introduced under the name of maltine, which claims to embody the nutritive principles of all the cereals, and to be superior to any of the preparations made from barley alone. A limited use of it has impressed me favorably, and I believe it will prove to be a nutrient of great value.

Before leaving this subject let me impress on the minds of my hearers the importance and necessity of a State Hospital for Consumptives. The subject has been agitated in various quarters, and the members of our profession are called upon to press it on the attention of the people and the Legislature, as an institution required by the interests of humanity. Under present circumstances, a large number of our fellow beings are drifting continually from the interior to the seaboard with the delusive hope of saving their lives from the great destroyer, but actually stepping into the jaws of death. It is time that something were done to turn back this current. One or more health resorts, in well chosen localities in the interior, would save many a life.

The hospital wards are well supplied with malarial patients, almost all of whom come from the interior. The Sacramento Valley and Bakersfield are the two localities most distinguished in this respect. The cases from the region about Bakersfield are the worst. A few malarial cases are indigenous to San Francisco, coming from the flat quarter of the city on the southeast. It is quite common for individuals who have lived for some time in a malarious region without suffering, to be seized with intermittent fever soon after changing their residence to San Francisco—the climate of the seaboard developing the disease which lay dormant previously.

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The form of malarial disease generally presented is an irregular intermittent of the tertian character. The patient gives an old history of ague, cured and returning, again and again. Nearly all have taken quinine liberally, but nothing else. An active mercurial cathartic comes first in the treatment, and then a few moderately large doses of sulphate of quinia or cinchonidia. The latter appears to be fully equal to the former in doses one-fourth or one-third larger, and it is much cheaper. Ten grains of the sulphate of cinchonidia, night and morning, for two days, are pretty certain to arrest the disease. After that comes the necessity of preventing a return. For this purpose, a repetition of an antiperiodic once a week regularly for a month or two is generally effectual. When the complexion denotes a long and deep impression of the malarious influence, as it commonly does in the Bakersfield cases, something more is necessary; for instance, a course of nitro-muriatic acid, or preferably, of the blue pill, with iron or other tonics. Arsenic is a famous old remedy in such cases, but I have seldom gained much benefit from it.

Within the last year I have treated a number of cases of troublesome recurring intermittent entirely with tincture of iodine, in the dose of 12 to 15 drops three times a day. So far, the success of this method is well marked. In one of the worst cases, a man who had been suffering for many months, and whose skin was sallow and almost jaundiced, only one chill followed the institution of the treatment, after which he was entirely exempt. The iodine, however, was continued for several weeks, when he left the hospital in perfect health. It may be that the iodine treatment is peculiarly adapted to hospital cases, for the reason that such cases present hepatic or splenic or other visceral derangements to which is due their resistance to simple antiperiodics.

Modern medicine is boastful of its progress, and the present generation of medical men look back with pity if not contempt on the ignorance of their fathers. But it may well be doubted whether the treatment of many of

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our most common diseases has been improved in the least degree. Therapeutics has not kept pace with physiology, pathology, and the kindred departments. Men have expended their energies on more inviting pursuits than watching at the bedside and administering to the comfort and welfare of the sick. The interests of science have, to a great extent, superseded the interests of the patient. It is true, that sooner or later, all discoveries and all advance in theory and in principles must lead to improvement in practice. A few important diseases and a few specialties have already illustrated that proposition. But at least three-fourths of the commonplace derangements of health, such as demand the attention of the practitioner in his daily round, are almost overlooked in therapeutic studies. In fact, some of our text books while enlarging on diagnosis, pathology, and other heads, have curtailed the treatment as though it were of minor importance.

These remarks apply forcibly to the modern treatment of intermittent fever. With the majority of practitioners, one word sums up the therapeutics of this disease, viz.: quinine. To prevent the coming paroxysm is an easy task, and this done, the patient is left to himself, with almost a certainty of a recurrence; or the medicine is continued day after day, till its power fails, and then the dose must be increased. Despairing of permanent relief from regular means, the unhappy patient resorts to all kinds of nostrums, and is cured at last by some one of the really valuable combinations which quackery has stolen from the armamentarium of the profession.

The tenacity with which the habit of intermittent fever clings to the system after the first invasion, even when no local lesions appear to have been established, and when the original cause is not renewed, presents a subject worthy the attention of every practitioner. In the treatment of such cases, all our resources should be brought to bear. I need say nothing more in regard to the means demanded when visceral derangements exist. But it may be well to recall the ancient practice, much overlooked in modern times, of

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awakening a sensibility to the action of anti-periodics by active purging or vomiting. A dose of quinia which would be impotent of itself as a preventive of ague, may be rendered thoroughly effectual by such preliminary treatment.

Although quinia stands at the head of anti-periodics, it may be replaced with advantage by cinchonidia, "dextro-quinine," or "cincho-quinine," when the patient has become inured to its action. From a trial of these preparations, I am well assured of their activity as substitutes, in doses but slightly increased. "Dextro-quinine," which has been lately introduced, is undoubtedly a very active agent; and the testimony of a large number of disinterested men who have put it to the test, would seem to place it nearly or quite on a level with sulphate of quinia. My own experience of it accords with this view.

The preparations referred to possess a value growing out of their comparative cheapness. The enormous consumption of quinia all over the world makes it a costly drug. At present, the substitutes can be bought for one-half or two-thirds the price of quinia.

Typhoid fever is nearly always present in the hospital wards, but I do not recollect any period when there was so little of it as during the past Winter. The cases are generally severe and protracted, sometimes hanging for days between life and death, but very generally terminating favorably. One would infer, from the previous condition and habits of the average typhoid hospital patient, that a large proportion would die. But the very opposite is true. So far as my observations extend, men of middle age, accustomed to a life of toil, hardship and exposure, and careless in their general habits, withstand a siege of typhoid in the wards of a hospital decidedly better than younger persons of more vigorous and unimpaired constitution, with the better care and nursing of private practice. I can say with confidence, that for a period of fifteen years the fatality among my hospital cases has not been nearly so great as in general practice.

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As to the communicability of typhoid from one person to another, I have never witnessed any evidence of it in California; and I believe this accords with the general experience of medical practitioners on the Pacific Coast. At no period perhaps during the last fifteen years have the wards of St. Mary's and of the County Hospital been free from cases of this disease, and in no instance have such patients been isolated or removed from the contiguity of others. During that period I have never known a solitary instance in which it could even be suspected that the disease was communicated, either to other patients or to a nurse or attendant. In private practice, when the disease *originates* in a given locality, it appears to spread by contagion from one person to another. But this should be attributed to the continued operation of the original cause, the victims succumbing all to the same local influences one after another. Yellow fever presents a similar feature, in requiring some local influence to be superadded to the presence of the diseased individual, to enable it to spread. In other words, it is infectious and not contagious.

In regard to treatment, no peculiar method is pursued. Each case is vigilantly watched, and the local determinations, which are always imminent, promptly encountered. The very large doses of quinia which were in vogue a few years ago, a practice introduced from Germany, are now mostly abandoned. A few full doses may be useful in the early stage, and it may be given in connection with stimulants in the stage of exhaustion. But stimulants I always avoid in the first stages, reserving them until they are called for by the failing strength. Milk is the best basis of diet, and buttermilk may be employed if agreeable to the patient.

Hemorrhage, either from the nose or the bowels, has been rather a rare attendant of typhoid in my observation, particularly in the hospital. From the bowels it has occurred more frequently and with greater fatality in my

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private practice, and particularly when convalescence had begun.

Rheumatism and neuralgia are great pests in a hospital. A few years ago salicilic acid and its combinations were introduced for the treatment of acute articular rheumatism, and they gained the highest position, although they have not fully maintained their reputation anywhere. I have continued their use and regard them as superior to anything else. To be effectual they should be administered in large doses—ten grains of the acid or its combination with soda every two hours. An anodyne at night greatly enhances the effect. But very often all the benefit attainable from this remedy ends in a week or ten days; and then iodide of potass, colchicum, and other remedies should be substituted. The more acute and violent the disease, the greater the benefit to be expected from salicilic acid. The most violent and intractable case of acute articular rheumatism that I have seen for many years, occurred two years ago in my private practice, the patient being a lady of middle age. Salicilic acid was rejected by the stomach, and opiates, both by stomach and hypodermically, utterly failed to relieve the pain. Quinia only distressed the head and had to be abandoned. I finally resorted to salicin, in doses of ten grains every two or three hours. A few doses gave decided relief, and it was continued for four or five days, the patient taking in all nearly an ounce of salicin, with no appreciable effect on the head, or in any other way than to cut short the disease and accomplish a complete cure in one week. It was the best pronounced and most satisfactory case of abortion of acute rheumatism that ever fell under my notice.

Colchicum combined with morphia furnishes excellent results in sub-acute rheumatism, especially in gouty complications. I generally give a drachm of the tincture with one twelfth to one eighth gr. sulph. morph. three times a day. After a few days, purging comes on, when the medicine must be suspended. Relief is simultaneous with the catharsis, but the latter commonly continues and is liable to

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give some trouble. In obstinate cases iodide of potassium may be added to the colchicum mixture.

There are always on hand numerous old cases of chronic rheumatism, often of two or three years' standing, which torment both patient and doctor. They are mostly local, and in the majority of cases seated in one or both of the lower extremities. The pain will sometimes gradually recede under treatment from the hip to the knee, then to the ankle, then to the instep or heel. In one or two cases it made a final lodgment in the latter, and was as invulnerable to the weapons of medical art as if the heel had been dipped in the Styx.

The treatment of these cases requires some ingenuity, particularly if the patient has been so long accustomed to a pain as not to know when it ceased, or if he has made up his mind that a hospital is a good permanent home. Local applications of energetic character must be made, and repeated with industry, such as tincture of iodine, rubefacients, blisters, antimonial ointment continued till it produces free pustulation, etc. Much benefit has been derived in some instances by wrapping up the knee, or ankle, or foot with eucalyptus leaves, renewing them daily for a week or more. These leaves are an active stimulant to the surface, and will produce vesication if their use be long continued. Showering the part affected for ten or fifteen minutes daily under the hydrant has cured some obstinate cases. It is sometimes proper in these cases to resort to hypodermic injections of morphia, atropia, or chloroform. In sciatica, the injection of ten minims of chloroform at bed time is very efficacions. It is best thrown in deeply into the cellular tissue. Injections of water alone occasionally answer an excellent purpose. There is no difficulty in weaning from his habit an old subject of hypodermic medication with morphia, by substituting water, provided of course the secret is concealed from him. I had one patient of this kind who was put to sleep every night for a fortnight by a hypodermic injection of cold water, and who finally himself proposed to abandon it, which was successfully done.

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Aconite, by hypodermic injection, is a powerful agent for the removal of these chronic, localized pains. It may be used in the form of aconitia, one sixtieth to one thirtieth of a grain dissolved in water, or in the form of tincture of the root. I prefer the latter in the quantity of about 8 or 10 drops. The only objection to it is the severe pain which it produces. This will be mitigated and the value of the injection enhanced, by adding the eighth of a grain or more of morphia. But advantage may be taken of the effect of aconite when the pain is kept up by *attention*, or in suspected malingering. A hypodermic injection of ten drops tincture of aconite given every night, has induced more than one of my old hospital habitués, after very few repetitions, to walk forth with alacrity and bid a permanent farewell to his old home.

Diseases of the heart and large arteries are common in the hospital. Valvular lesions, as might be expected, are traceable in the majority of cases to a rheumatic origin, but in no small number this history is wanting. The mitral valve is the seat of lesion in the worst cases, the usual train of disturbing symptoms growing out of regurgitation. Some very interesting cases of hypertrophy from aortic insufficiency or stenosis occur from time to time. The largest heart I ever saw was in a young man, a patient in St. Mary's, who came under my care with extreme orthopnea and extensive anasarca. Gangrene in both legs resulted from the cutaneous distention, and extensive sloughing ensued and endangered his life. But the process of repair set in and he recovered so as to lie down at night and rest with comfort. His appetite and strength returned and he appeared almost restored to perfect health. One evening, after eating a hearty supper, he fell back and died suddenly. On dissection, the secret of difficulty was found to be a congenital contraction of the aorta at a point two or three inches from the heart, where the artery scarcely admitted the end of the little finger. The patient was a laboring man, of large stature and of exemplary habits. Except the heart, all the internal organs were sound. The

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dropsy and impeded respiration had no other cause than the mechanical obstruction of the blood current. Had he lived a quiet and sedentary life, the contracted blood vessel might not have interfered with his length of days.

Patients with aortic aneurism often trace its origin to an accident or muscular effort which was followed by pain. In some cases the proof of this seems clear; mostly however it is mere conjecture. With great uniformity the subjects of aneurism are men who have been accustomed to lifting heavy weights in a stooping posture. Stevedores are particularly its victims. The patients have been mostly, but not all, hard drinkers. As a rule, the aneurismal lesion is accompanied with atheromatous degeneration of the arterial coats, showing it to be dependent on a general rather than a local cause.

After using, and witnessing the use of, the various expedients proposed for the cure of aortic aneurisms, I have ceased to treat them with the expectation of a cure. To arrest their progress is the only practicable indication. This is best done by bodily repose, or rather abstinence from active exercise, and arterial sedatives, such as veratrum viride and digitalis. Other means are required for special conditions. Under this treatment well developed aneurism may often be kept in abeyance for years, the patient meanwhile enjoying life without material suffering.

There are always cases of jaundice in the hospital wards—idiopathic jaundice, if the term be admissible, in which no organic lesion can be detected. About a year ago there existed an epidemic tendency to jaundice, which was observed in out-door practice, not only in San Francisco but in other parts of the State. For a period of six months or longer, patients affected with various diseases exhibited the deposition of bile in the conjunctiva and skin. But besides these slight and generally transient developments, numerous instances occurred of well pronounced jaundice, some of which were in children.

The treatment pursued by me is simple and without novelty—mainly blue pill and nitro-muriatic acid. The

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former is given continuously in small doses, suspending it on the first indication of ptyalism, and resuming it when proper. Five drops of the acid three times a day is the minimum dose. Attention to the bowels is a matter of course. But I would mention one important point, namely, that diarrhea, or a too loose condition of the bowels, is unfavorable to cure. There ought not to be more than one daily evacuation. Success has uniformly attended this treatment when the jaundice has not been due to chronic lesions.

Cases of cirrhosis, cancer, fatty and amyloid degeneration, etc., of the liver, are nearly always present in the wards of a large hospital. I might greatly extend these notes by referring to them, and to lesions of the kidneys, spleen, stomach, and other organs. But I am fearful that there is not enough of novelty or originality in my report to warrant its further extension.

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FUNCTIONAL NERVOUS TROUBLES.

BY G. W. DAVIS, M. D., OF CHICO.

[BEING A SUPPLEMENTAL REPORT ON PRACTICAL MEDICINE.]

In the Upper Sacramento Valley we very frequently have to deal with some form of general or local nervous disease, as the result of exposure to that potent nerve poison, malaria. Malarial poison is quite frequently the exciting cause of nervous troubles, as it exerts its most baleful influence by exhausting and debilitating the nerves, more particularly the complex sympathetic system, rendering it susceptible to assume some of the protean forms of disease upon the immediate contact of an exciting cause. Much has been imparted about the two great centers and the nerves, in the last decade, through the indefatigable researches of Erb, Romberg, Handfield Jones, Hammond, Brown-Sequard, and others; yet notwithstanding the clear and lucid expositions of these men of science and profound learning, many of their opinions have not passed into the channel of positive truth or fact. We will have to tarry awhile longer before we can get a thorough and distinct view of this subject which we now see but dimly.

At the present day, a physician must know little of his profession not to be able to readily recognize a true hysterical convulsion, or to interpret the meaning of some of the common but less important manifestations of hysteria, such as the globus hystericus, the sense of choking, the choreaic twitching, the irrepressible sigh, and the impulsive crying. In fact, this mysterious malady, in its typical form, can scarcely be mistaken by any experienced practitioner, but attacks of functional nervous troubles recur in patients,

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male and female (who are more or less exposed to that toxic element, malaria), free from every general symptom of the disease. These attacks of functional nervous troubles are of much interest and importance, and should be well understood and appreciated, lest they lead us into grave errors of diagnosis and treatment, making us mistake a simulated for a real disease, or *vice versa*. Like general hysteria, it is protean, and may simulate almost all the diseases we have to deal with; but the cases that are most likely to mislead us in our treatment are when these functional nervous difficulties put on the guise of tetanus, epilepsy, chorea, paralysis, retention of urine, or disease of the spine.

What I have to present to the Society is a clinical history of a few cases of nerve symptoms. I regret that I cannot give these groups a name, and yet I do not know but what it is as well; for in no department of medicine are we so often misguided by a name as in the treatment of nerve disorders. The cases I have to present belong to a class that we meet with quite often in the malarial parts of the country, and the symptoms are so constant, varying but little in each case, that I really think they are entitled to a name.

CASE I. Miss J——, age 19. A large, well nourished, sensible girl; bilious temperament. I was called to see her in haste, and when I arrived I found her in a semi-comatose condition; ascertained that she was menstruating and having a good deal of pain; was a victim of habitual constipation, and had gone five or six days without a passage; pulse and respiration quite natural; pupils normal; absence of rigidity of the muscles; no paralysis; her appearance was that of perfect quiet; dashing cold water into her face failed to move a single muscle. Ordered a purgative enema. A half hour after this I was called into her room and found the patient sitting on the bed, quite rational and disposed to be cheerful. Soon after the enema, I was told she aroused and requested to be put upon the chamber, and

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voided a large amount of hardened fæces. During a brief conversation with her to gather some history of the case, she was in an instant taken with a severe pain in the regions of the heart, stomach, and womb, which rapidly became so excruciating as to demand all the aid possible to keep her in bed. I sent in haste for chloroform and with a few drops upon a napkin applied it to the nose. She had taken but a few breaths of the vapor when she sank into a profound stupor; water again dashed into her face failed to make any impression, but in about an half hour I was enabled to arouse her and she awoke rational and quite free from pain. A short time afterwards the pain came on as intense as before; the chloroform was again resorted to cautiously. It was remarkable that but a small quantity of chloroform was required to cause her to sleep. Subsequent to this, by a careful use of the anæsthetic the pains were controlled without producing complete anæsthesia. She made a pretty rapid recovery, with but little treatment of quinine and alteratives, and has had no attack since, but is at this writing a victim of headache and neuralgia. We might call this a case of hysterical coma, but the name would give us but little idea as to the nature of the disease. It will be proper for me to mention at this point that just a few days before this young lady's sickness she had returned from a visit to relatives living in one of the most malarial regions in the Sacramento Valley, and she evidently presented symptons of malarial poisoning. It is a well established fact in neuro-pathology that an intestinal irritation will produce spasms of the cerebral arteries, and this irritation acts also on the spinal cord producing tetanic convulsions. In the above case there was evidently spasm of at least some of the cerebral arteries, producing coma; if the irritation had affected the cord, as it sometimes does, and produced rigidity of the muscles, we would have had a typical case of catalepsy; or had there been violent muscular movements, we would have had a case of convulsions. As to the agonizing pain, especially in the region of the womb, might it not have been simply an exaggeration of

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the dysmennorrhea caused by hyperasthesia of the sensory centers, and this susceptibility brought on by the recent exposure to malaria. This seems to me the only possible way at least for explanation.

Case II. L. C. Male, age 35; habits active; has been a victim of intermittent fever for sixteen months; his appearance was decidedly that of malarial cachexia; has been troubled with constipation of the bowels for the last two years; without taking a purgative he goes from four to six days without a movement; tongue coated, digestion tolerably good. Upon several occasions he was attacked with very perceptible nervous twitchings that were choreaic in their character; when these conditions were present, he seemed to have but little control of himself; there was a partial loss of motive power. He had the unfortunate habit of drinking from three to four cups of coffee at each meal. Was ordered nux vomica, ext. conii, calomel, and quinia, and directed to leave off his coffee. He made a first rate recovery in about two or three months. I think this was a case of incipient paralysis, which was produced by his daily exposure to malaria and the excessive use of coffee.

CASE III. Male, age 20; previous health had been good, with the exception of chills for four or five months, but since the age of eighteen has been addicted to the use of alcoholic liquors; smokes a good deal, and has lately conceived a very strong and ardent passion for a young lady, whom he was forbidden to visit.

August 9th.—When called to visit him, he was suffering intensely from neuralgia of the bowels—it was impossible to keep him in bed. A slight anæsthesia from chloroform gave him relief; the pains returned every few hours, but were promptly relieved by chloroform.

August 10th.—An evacuation from the bowels to-day gave him much pain. After a short time, the pain left his bowels and went directly to his head—has evinced a few symptoms hysterical in their character—is disposed to talk

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too much. I gave him nux vomica, potassa bromidii, with a little chloroform in severe attacks.

August 11th.—Pain not so intense; had an action of the bowels to-day for the first time without producing pain. Is getting nux vomica, iron, quinine, with nutritious diet.

August 14th.—For the last few days has had no return of pain; appetite improving and bowels becoming more regular. Ordered the iron and quinine to be continued.

August 16th.—Is rapidly convalescing; appetite good and bowels regular. Ordered the iron and quinine to be continued for two or three weeks.

A few months afterwards he had one or two relapses in which the pain was quite severe, but the attack lasted only a very short time. In this case there were certainly causes enough to produce a wreck of the nervous system; malarial infection, rather excessive drinking at a tender age, smoking, and the mental excitement induced by an intense, but to him, an almost hopeless love.

CASE IV. S. B.—, female, age 25; has had chills for several months; is considerably emaciated and anemic; has frequent attacks of neuralgia. Was called to see her in haste; found her to all appearances in labor; the pains came quite regularly every five or six minutes. On examination, I found the uterus not at all dilated but much bearing down. I ordered the usual anodyne treatment, and as soon as she came well under its influence the pains gradually ceased and in the course of a few hours had disappeared entirely. Two or three days after this I was again called in as much haste as before, and when I reached her bedside I found lady friends at each hand and knee performing the usual offices for one in labor; the patient's face was flushed and she was holding her breath and bearing down with pains. I put myself in readiness as quick as possible, fearing I would be too late to render her assistance, but on making an examination, to my profound astonishment I found no dilation of the os and *no* movement of the uterus during pains. I was soon satisfied that there was no threatened

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miscarriage. Of course I did not feel very much exalted over this discovery. I put her on anodynes as before, with the same effect. Subsequent to this her pains returned every few days, sometimes moderate and again quite severe. Finally opium gave her more than temporary relief. I gave her nux vom., citrate of iron and quinine; gave her quite freely of quinine for several weeks and with very decided benefit. After this she went the full time without any further trouble except several chills, and was delivered of a healthy child. About two months after confinement she had a return of the pains, but not severe. For a number of weeks I put her upon quinine and cod-liver oil, and upon this treatment she made a pretty good recovery. After moving from her location to one of a higher altitude she became strong and robust. This case I think was one of uterine neuralgia, and I give it in this paper, for two reasons: First—Because at the beginning it so closely simulated a case of threatened abortion that I was deceived. Secondly—Because we must rely chiefly upon the administration of quinia and less upon anodynes or anti-spasmotics, when there is malarial poison existing.

I very well remember being summoned in haste early one stormy morning in the winter of 1871, to attend a woman in labor; and when I entered the room she was grunting and pulling away at her nurse and sympathizing friends at a furious rate, and when I stopped a moment at the stove to warm myself, she became very impatient and begged me to come to her assistance. On placing my hand upon her abdomen you can well imagine my astonishment at finding it not the least enlarged, and on passing my finger into her vagina I found the womb rather small and somewhat prolapsed but otherwise perfectly normal. My efforts to convince her that she was not even pregnant, much less in labor, were unavailing for some time, and I am quite sure that if there had been another physician at a moderately convenient distance she would have discharged me and sent for him, so thoroughly impressed did she seem to be that

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she was pregnant and in labor. The patient lived between the San Joaquin and Merced Rivers and a short distance from their junction. She had been a victim of malarial fever for more than a year. She was cadaveric in appearance; the skin yellow, bowels constipated, perceptible enlargement of the liver and spleen, urine scanty and high colored, tongue coated and digestion poor; her pulse was rather strong but frequent, beat 90 to 100; temperature 99; her catamenia had been absent for seven months. At this visit I gave her several small doses of calomel and rhubarb; gave her hypodermic dose of morphia over the abdomen; applied turpentine stupes to the same. On leaving, I ordered several doses of bromidi potassa and elixir valer. ammonia to be given every three hours if required to keep her quiet, and a dose of castor oil to be given every four hours until her bowels moved freely, and in addition to this to use several times if needed an enema of warm water and castile soap. On visiting her the next morning I found the calomel, rhubarb, and two doses of castor oil, with the aid of several enemas, had forced an evacuation of an astonishing amount of hardened fæces. She did not rest well until several hours after this evacuation, and at the time of this visit she was feeling comparatively comfortable; skin moist, also tongue; less tenderness over abdomen and kidneys acting more freely. I put her upon a permanent treatment of quinine, iron and strychnia, and a pill—to overcome the habitual constipation—composed of podophyllin, nux vom., capsicum and rhei, with now and then an alterative dose of calomel. After this she had several not severe irregular paroxysms of fever, but no return of the false symptoms of labor. About two months from this time she had very much improved and had a return of her menses. I suggested to her husband that as soon as the weather became warm and settled that he had better move her to the mountains, at least during the Summer and Fall months. He did so, and the last time I heard from her, which was more than a year afterwards, she was in excellent health. This case would be placed perhaps by a very large

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majority of physicians under the broad term "hysteria." I believe this and like cases belong to the province of practical medicine.

The treatment emphatically indicated was anti-malarial, and the train of symptoms that ensued was the fearful result of constant exposure to malaria, debilitating the wonderful system of nerves known as the sympathetic. Some authors hold that hysteria is as much a disease as any other affection and should be treated as such. Hanfield Jones is disposed to limit the name to such cases as are pure simulations of disease; other authors hold different views. Shall we deal with all functional nervous disorders even in females as hysteria? I think it will help us to arrive at a conclusion on this subject if we bear in mind one fact pretty well established in neuro-pathology, that the same nervous phenomena may be produced by very different causes. Suppose we have a patient in good health who has hysteria from a fit of anger, and most all of us have seen cases of this kind; then she or he richly deserves the odium attached to the name, and should have no other treatment than a bucket of cold water dashed into the face. But should the nervous derangements have been caused from frequent attacks of malarial fever, either congestive, remittent or intermittent, from which the vital energies have been exhausted, where there has been no excessive gratification of the sexual passion; no uterine difficulty of any note, and should the nervous troubles above cited supervene—should the patient be told that she has hysteria? I think not. Take for instance a young and lovely girl with health and rosy cheeks, who has been caused deep and heartfelt sorrow, on account of the death of a dear relative; who had no thoughts save those that are pure and holy, whose emotions are all tenderness and love, watching night after night at the bedside of the dying relative, around whose heart the tendrils of her own had entwined with a tenacity that death alone could separate; the tender emotions of love and affection wrought up to the highest pitch, nerved her body to endurance far beyond its normal

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capacity to bear, and when the last supreme moment came, the tense nerves could bear the strain no longer and the vital machinery was left without a controlling power. Such a case should awaken our tenderest sympathies, and what true, honorable physician at such a moment could even *whisper* the name "hysteria."

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REPORT ON SURGERY.

By E. H. WOOLSEY, M. D.

As Chairman of the Committee on Surgery, I propose to offer some observations on shock—a subject of the highest importance to the surgeon, and yet one that has been generally avoided by surgical writers. I feel like apologizing to you for attempting to discuss a matter about which so little has been written, and so little seems to be known. The dismissal of *shock*, by the able editors of perhaps the greatest surgical work extant, "The Surgical History of the War of the Rebellion," as a subject "which has perplexed pathologists for centuries" (Medical and Surgical History of the War of the Rebellion, Part I, Surgical Volume, page 65), aptly expresses the difficulty here involved. The literature upon the subject is meager, and for the most part chaotic. It is true that the text books contain valuable ideas regarding the *management* of shock, and that Messrs. Erichsen, Paget, Brunton, Morris, and a few others, have, of late, favored us with considerable information upon the subject, but it must be admitted that the latter is still obscure, and that shock is nowhere clearly differentiated from other conditions. Now I do not propose to attempt to add anything to, or discuss at length the theories respecting the *essential* nervous disturbance in shock, for acurate knowledge thereon seems to me to be, for the present at least, utterly unattainable. We know that the nerve-centers are affected in shock; we know this from certain phenomena with which we are familiar; we know that emotional impressions and impressions of injury are sent into the body and reflected back as symptoms of shock, but just what takes place at the nerve-depots or centers, which

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receive these impressions, we do not know, and do not at present possess any means of knowing. On this point, however, the pathology of shock is probably not more inscrutable than that of many diseases which we affect to understand; that is, the boundary line of the knowable in shock is probably not more distant than that which the pathologist frequently encounters elsewhere. A realization of this fact will at once exclude a vast amount of confusing, if not altogether profitless speculation, and thereby materially assist us in this study. We will next proceed to a somewhat systematic consideration of the subject. We would define shock *as the thrill of a violent impression, acting primarily upon the heart.* The *impression* may be due to powerful emotions of the mind, or to sudden bodily injury. Thus we have two grand *etiological* divisions of shock, *psychical* and *physical*; the former embracing those cases in which the heart is profoundly affected by fear, grief, horror, etc. The latter covering those grave disturbances of circulation and inervation which follow and are immediately dependant upon irritation, concussion, and solutions of continuity. When we, as physicians, tenderly as we may, declare the patient dead or dying, we read in the faces of friends, the agony of psychical shock, the reflex of our utterance upon their hearts. The prostration which occasionally accompanies the passage of the bougie is an expression of physical shock, a palpable index of heart failure. Failure of the heart's action is the first *appreciable* disturbance in shock, and but for such disturbance there would be no *appreciable* shock. This, however, is not new, since the serenest person must some time have felt a *thrill* of pain or pleasure reach the heart, and *thrill* is inferedly the essential factor in shock, whether the latter result in the loss of a single heart-beat or in death. The common association of mental emotion with heart disturbance, by poets of every age, is based not so much upon poetic fancy as upon what mankind actually feel; and I know of no

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more truthful or scientific description of psychical shock than that contained in the following couplet from Spenser:

> The *cruel word* her tender heart so *thrilled*,
> That sudden cold did run through every vein.

Here we have first an impression acting upon the heart, and then a lowering of temperature, in consequence of heart failure; and this is obviously just what occurs in physical shock. It cannot be denied that other portions of the nervous system beside that which presides over the heart, are at times simultaneously, or even specially affected in shock, since only on some such hypothesis can certain exceptional phenomena be accounted for. Still, we maintain that the influence of shock upon the general system is, so far as we are at present capable of determining, sequential to functional aberration of the heart. In short, we hold that it is clinically demonstrable, *that the symptoms of shock are signs of heart-failure*, and that this view is consonant with physiological and pathological considerations.

ETIOLOGY.

The causes of shock are almost as numerous as are the incidents and accidents of life. The operation of the agent or force concerned in the production of shock, depends, on the one hand, upon the nature of the impingement, and on the other, upon individual susceptibility to morbid impressions. In general terms, it may be said that the degree of shock is proportionate to the degree of susceptibility, and to the velocity and intensity of the impulse; *i. e.*, sensitive people are more apt to suffer from slight, and apt to suffer more from considerable moral and physical impressions, than apathetic people, and the more abrupt and powerful the blow, the greater will be the *thrill* or shock. As a rule, the tranquil nature has greater powers of resistance, and vice versa the "man of nerve" is usually a calm man.

Still, excitable people frequently exhibit conspicuous self-control; nor can this be wondered at when we remember

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that they are characteristically endowed with *hope*, which may be regarded as the psychical equivalent of physical endurance. Again, it would seem as if the impressionable nature were to some extent protected by extraordinary qualities of perception and appreciation. Phlegmatic people are more cautious, and therefore less likely to run headlong into danger; but once in, unless there be ample time for reflection, they are less likely to escape unharmed than those who act upon impulse. The phlegmatic individual is, however, least likely to be shocked by injuries, because his nerve centers are dull or inappreciative; but let these dull centers be once positively thrilled by emotion or physical disturbance, and the resultant shock will be more enduring than a like shock acting upon a sensitive-nervous organization. *Sensitive natures often yield, but seldom break; stoical natures seldom yield, but yielding, break.*

Again, the more nearly the pyschical center of an individual is approached by violence, the greater will be the shock. For example: the miser will be more shocked by financial loss; the loving husband by a knowledge of his wife's infidelity; the zealous professional by professional dishonor; the pious man by a sense of revolting wickedness; the coward by physical danger; and the bully by a stunning blow on the head. A blow at the ruling passion will be sure to wound, and a "center shot" may kill. Running parallel to this is the fact, that the greater the approximation of physical injury to vital organs, the greater will be the shock. The axiomatic rule laid down in every work on surgery, that the mortality from amputation increases progressively as we approach the trunk, derives its force mainly from this consideration.

Chief among the predisposing causes of shock, may be named *exhaustion*. This will be readily admitted by those who have ever over-exerted themselves, when they recall the nervous irritability which is inseparable from fatigue. Nervous excitability increases with exertion. We are calmer at morning than at evening; after a hard day's

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work our nerve centers are inordinately sensitive. We are then more easily agitated and annoyed and injured.

The hunter presses the animal which he pursues to the verge of exhaustion, knowing that a slight wound then will more surely bring him into his power than the infliction of a much greater wound at a time when the animal's nervous force is entire. Dr. Livingstone, in his missionary travels, speaking of the effect of shock upon wild animals, says: That the eland will withstand a terrible wound, if inflicted while the animal is quietly feeding; but that when hunted—when his whole nervous force is imbuing the organs of motion, he can be dispatched by a wound which does little more than injure the muscular system.

The exhaustion resulting from excessive venery favors the recipiency of shock, because the nervous system is rendered extraordinarly sensitive by such over-indulgence. In short, exhaustion from any cause, from disease as well as from over-physical or mental exertion, enhances the normal susceptibility to shock, and, moreover, favors the development of the morbid processes inaugurated by shock.

Among the proper causes of shock, mental e notion ranks *first*, in point of frequency. Shock from mental causes varies greatly in intensity, and in its after effects. The immediate effects range from the merest sensation of cardiac disturbance to actual and permanent arrest of the heart's action. The after effects are commonly expressed in changes of feeling, habits, or appearance—of the latter, rapid decolorization of the hair is the most remarkable. The fact of the occurrence of this change is attested by numerous historical cases, and is alluded to by Byron in the Prisoner of Chillon, in the following words:

> My hair is gray, but not with years,
> Nor grew it white
> In a single night,
> As men's have grown from sudden fears.

All are familiar with the temporary heart disturbance resulting from ordinary mental emotion, and it is in the

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province of the physician to frequently find persons nearly killed by emotion.

In support of the fact that mental emotion is in itself capable of destroying life, numerous historic instances might be adduced. The case of the Janitor of King's College, Aberdeen, Scotland, is a conspicuous one, with which you are probably all familiar.

Pain has been generally regarded as a prolific source of shock; but this opinion, we think, is not wholly warrantable. In surgical injuries, pain is usually present, and therein seems to be not only an active and principal factor in the origination of shock, but also to exert an especially baleful influence thereafter, and it is probably on this account that it has come to occupy its present prominence among the causes of shock. But this *seeming* relation of pain to shock, on the one hand, has never been made out, and on the other hand, is negatived by the occasional occurrence of perfectly painless shock, *i. e.*, shock accompanied by anesthesia of injured parts, and by the very frequent development of shock from surgical operations, made under complete general anesthesia, and still more emphatically by the general if not altogether invariable non-appearance of shock in patients suffering "the agonies of the damned" from neuralgia, rheumatism, synovitis, and other excruciatingly painful affections. Now we have known patients to exhibit well-marked symptoms of shock from ordinary manipulation of fractured legs and arms, and even of fingers; but we have also observed similar and apparently identical effects upon interested lookers-on; and while it cannot be denied that pain may be as potent a cause of shock as emotion, we are yet inclined to the view, of its being only accidentally associated with the potential shock impression, just as excitement is accidentally associated with anger, and that its evil effects in shock are chiefly attributable to the exhaustion which it conditions, and that, moreover, while it cannot be regarded as in any sense conservative, its injurious effects in shock may be very much less hurtful than

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the paralyzing influence of those drugs which are commonly employed to dispel it.

Burns and scalds are usually classified among the causes of shock. It is quite probable that the nerve-centers at once become cognizant of the enormous nerve injury in these lesions, but scarcely probable that the central impression is in the nature of a *thrill.* The system seems to be *irritated,* rather than *startled,* and the constitutional phenomena rather the phenomena of pain than of shock. Without dwelling upon this matter, we may say, that the uniformly beneficial influence of anodynes in cases of burns, etc., serves to show the analogy pointed out, and to differentiate the systemic disturbance in these cases from that resulting from shock.

In regard to the great variety of traumatic injuries, we shall simply repeat, that, all things being equal, the more powerful the blow, and the greater the destruction and mutilation of tissues, the greater will be the shock.

There is, however, one class of injuries which I here desire to specialize as peculiar in their severity, viz., *railway injuries.* Mr. Erichsen first called attention to this fact, and was harshly criticized therefor. Having had a somewhat extensive experience in injuries of this sort, I take especial pleasure in adding my testimony in this behalf. Railway accidents produce greater concussion and greater destruction of tissue—in short, embrace a greater potency for harm to the organism—than any other, and I am surprised that any one familiar with them should regard them as other than exceptionally severe.

SOME THOUGHTS ON DIFFERENTIAL DIAGNOSIS.

Shock has been generally confounded with syncope and collapse. Mr. Hunter, Sir Astley Cooper, and Sir Benjamin Brodie, seem to have regarded shock as a distinct affection, but most *later* writers, while adhering for the most part to the teachings of these eminent men, have departed therefrom to the extent of so *confusing* shock with syncope and

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collapse, that the reader is at a loss to understand their position upon this point. Mr. Savory, in his article on "Collapse," in Holmes' Surgery, has incorporated therein a most excellent and comprehensive study of shock; but even he, while generally considering shock as *sui generis*, has rendered his meaning a little obscure by a citation from Travers, to the effect that "collapse, syncope, and shock, *differ from each other in degree rather than in kind.*" Indeed it would seem that the enunciation of this idea by that celebrated pathologist just named, has exerted a marked influence upon all writers on shook since his time.

It is true, that the *symptoms* of shock simulate those of syncope and collapse, but it does not necessarily follow, that there is no difference between these several conditions. Syncope is a condition dependant upon cerebral deprivation of blood, and may result from simple hemorrhage, disease of the heart, and a great variety of causes, inclusive of shock; but because shock happens to be a sometime or even frequent cause of syncope, does it follow that they are the same? Collapse, or the condition of extreme prostration, is the usual mode through which most diseases prove fatal, and is not less common, or less intimately related to cholera, typhus, and various other exhausting diseases, than to shock. There would, therefore, be as *little propriety* in characterizing any one of the diseases referred to as collapse, as to use the latter term as a synonym for shock. Hence, to *speak of* or to regard collapse and syncope as the same thing as shock, is to utterly ignore the important idea conveyed by the word *shock.*

When called to attend a person suffering from an injury, it may at times be difficult to determine for the moment, whether the condition is one of syncope or shock, or whether the former is independent of the latter. Again, it is not always easy to say at once, how much depends upon the traumatic lesion, and how much upon circumstances attending its infliction, or on hemorrhage, pain and emotional disturbance. A careful study of the case, however, with a due

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regard for the value of each symptom, will generally enable one to properly estimate the sources of danger.

PATHOLOGY.

Physicists have defined the waves of light and sound, but never the courses of thought and impulse.

The transit of an impression of injury, and the translation of psychological phenomena into physical disturbance, can not be appreciated by the senses. They are, probably, therefore, beyond the scope of the scientist, and without the pale of science, though possibly within the range of legitimate scientific speculation. Scientists, however, "reason from what they know," and it should not be forgotten that speculation divorced from facts is not scientific.

Now, we know that there are several different kinds of nerves, and various sources of nervous disturbance, and taking this as a point of departure, it might be possible to reason out the modes of production of the several different kinds of shock. As surgeons, however, we are chiefly concerned with traumatic shock, and have therefore most to do with peripheral nerve irritation or lesion. We know that from peripheric nerve injury, there may result several distinct symptoms, such as pain, sensations of heat, cold, and tingling, spasm, delirium, coma, paralysis, and disturbances of respiration and circulation; and while it must be admitted that several symptoms may result from irritation of a single nerve, just as several tunes may be played on one string, it is yet fair to presume that there are as many different kinds of nerves as there are classes of symptoms.

Some of the foregoing symptoms are obviously due to irritation of sensitive nerves, others to lesion of motor nerves, and it is now conceded that those disturbances of circulation, respiration, and cerebration, resulting from trauma, are caused by lesions of *non-sensitive nerves* which connect with functionary nerve-centers. It is likewise agreed that surgical shock may condition weakness of the heart, modification of the blood-vessels, and actual cessation of ordinary chemical interchange between the tissues and

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the blood, and that these changes are probably also due to lesions of non-sensitive nerves. Hence, in every severe surgical injury, there may be lesion of several different kinds of nerves, each of which is capable of producing special functional disturbance.

Now, the general organism may entirely escape, even when there has been considerable local injury; but generally in such cases, more especially when there has been extensive mutilation, the *thrill of the concussion* is followed by *temporary* loss of consciousness, and *temporary* arrest of the heart's action. When this is the case, which may not always be—for the *thud* may *directly* kill—the return cardiac movements are never at once perfect or strong, the pulse will be irregular and extremely weak, if not altogether absent for a considerable time, and this together with other symptoms of deficient cardiac inervation, often seem to be intensified and prolonged by the *presence* of injured parts, by the agony of injured *non-sensitive* as well as of sensitive nerves, and more, in fact, by the former than by the latter, since in those cases of shock where there is anesthesia of wounded parts, the heart failure is usually greater and more persistent, and amputation here, even during profound shock, is, in my experience at least, generally followed by prompt and very significant reaction. (Cases bearing upon this will be found in my reports to the "Western Lancet.") A parallel to this, is the influence exerted by the *presence* of a personal enemy, and the relief occasioned by his departure.

In a series of experiments upon animals, made by Dr. Boushey and myself (on rabbits and cats, and will be published in detail in the "Western Lancet"), it was found that apparent temporary arrest of the heart's action immediately followed the infliction of severe injury; that subsequent feebleness of the heart's action invariably occurred; and that the characteristic post mortem appearances were, (*a*) flaccidity of the heart, (*b*) distension of the right side, and partial distension of left auricle with dark fluid and clotted blood, (*c*) distension of the larger veins with dark

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fluid blood, and (*d*), unusual redness of the blood contained in the lungs.

In short, the phenomena of shock observed in animals accord with my observations on man, and although I have never had many opportunities of studying the lesions of shock in the human subject, though many cases have proved fatal under my care, I am yet of the opinion that no marked incongruity exists between the foregoing deductions and the mode of production of shock here adduced.

The initial and chief disturbance in shock, *failure of the heart's action*, is noted in all the symptoms, and is emphasized in the phenomena of collapse. It is traced and measured by the thermometer, and is attested by the autopsy. The uniform distension of the right side of the heart and neighboring veins, evidence a redundancy of blood at the heart, instead of a want of it, as has been alleged. All explanations of the cause of the failure of the heart, based upon the draining away of blood from that organ, by remote vaso-motor disturbance, or by actual or supposed hemorrhage, are therefore untenable.

The damming up of both sides of the lungs—of the larger pulmonary vessels, and the right ventricle and left auricle with dark blood, and the long retention or stasis of blood in the lungs, as shown by its color, are irresistible proofs of deficient heart power.

The symptoms during life point to *over distension*. The paralyzing thrill of a severe injury brings the heart to a stand-still, and during the pause its cavities become at once over-distended. If death does not immediately occur, a struggle ensues—the heart is burdened with duty and enervated in power. The surplus blood in the heart is in the nature of an obstacle; if the latter be overcome, a restoration of power will come about, but if the heart be lacking in power, which is always the case when collapse follows, then the quantity of blood thrown from the heart becomes less and less with each contraction, and in a little time there is distension in systole as well as over-distension in diastole, and a little later on, it happens that the expulsive force of

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the right ventricle is insufficient to drive the blood into the lungs. Under such circumstances, the left ventricle has nothing whatever to do, because no blood comes to it from the lungs. Here, then, the right ventricle acts longest, on account of being constantly stimulated by the inflow or regurgitation of blood crowding in from the venæ-cavæ. In my experiments upon rabbits, it was found upon examination immediately after death from shock, that the left side of the heart had ceased to beat, but that the right side was contracting, and continued to contract, for several minutes; the right auricle somewhat longer than the right ventricle; and that in cases where digitalis had been given, the right ventricle continued to contract for a *considerable* time after death—in one case, for above an hour. Moreover, in one case, it was found that the hypodermic injection of digitalis immediately after death (from violence), was followed by rythmical contractions of the right side of the heart—the left side being perfectly passive—which continued with great regularity for an unusual length of time; which tends to show, not only that digitalis is capable of evoking or maintaining the reflex-excitability of the heart, but that the cardiac nerve centers may remain intact during and even after death, from shock; and that, therefore, the enervation of the heart coming on subsequently to the initial paralyzing stroke, is referrible to defective nutrition of the organ—to deficient coronary circulation, which must needs result from persistent over-distension of the right auricle and ventricle.

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REPORT OF COMMITTEE ON OBSTETRICS.

BY F. WALTON TODD, CHAIRMAN.

In the obstetric art, speculation is of little worth. It has no place for the isms and pathies of the ingenious innovator, but must rest upon that science which is the aggregation of principles that have stood the crucial test of experience; not my experience alone, nor yours, nor yet that of the united profession for a year, a decade, or even a century, but an experience which rises colossal like from all the dead years since Eve's throes with her first-born son. By the destruction of the Alexandrian library, and the subsequent check given to enlightened civilization in Europe by the invasion of the Scythians and Huns, many valuable discoveries of the Egyptian and Arabian physicians were as effectually lost as was the art of glass painting, while others, covered up in the crypts of monasteries, slumbered through centuries of mediæval darkness, to be rediscovered when the art of printing gave a new impulse to learning, and more rational means were then found for the relief of abnormal presentations, uterine inertia and consecutive hemorrhage, eclampsia, and every other impediment to successful midwifery, than charms and incantations.

The store-houses of the church tell us that in the dark ages obstetrics was not what it was in the earlier period or is now, and that the Egyptians practiced gynecology by means of the speculum, with more or less success. It is not my province, however, to review the history of a science with which perhaps you are more familiar than myself; nor shall I consume your time in the consideration of subjects pertaining to it with which our excellent journals are filled, but will confine what I have to say mostly to such

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practical facts as have come under the observation of the intelligent physicians of our Society and State, as far as I have been able to get an expression of them.

There is nothing in the dominion of obstetricy which demands a more thorough knowledge of its correct principles to secure good results, than the treatment of abortion. A want of this knowledge may and often is attended or followed by serious consequences, in cases not directly fatal. By the public they have come to be regarded with indifference, where they are not considered "blessings in disguise." Even medical men treat them very lightly, and yet to neglected or improperly managed abortions are due impaired general health, anemia, versions, hypertrophy with all its vexatious concomitants, including subinvolution. By abortions, I mean all miscarriages of the fœtus, which take place from the time the ovum has found a lodgment in the uterus, and prior to the time when the child is viable. An impression prevails among women that it is a very easy and harmless matter to bring on the catamenia within the month or six weeks after impregnation, but every physician of experience will concur with me that the flooding and constitutional shock are greater at that period of gestation than at the third month or any subsequent time, and so difficult is it of accomplishment that the means generally resorted to are almost sure to excite a high degree of inflammation, uterine and peritoneal, and sometimes septicemia, although the latter is, I think, more often met with in later abortions, when to the injury of the operation is added the retention of the whole or a part of the placenta. I would urge upon physicians great care in the management of these cases, which will be thrown upon them from time to time by the reckless, or criminal, or both. It is surprising how many of them will persist in saying that nothing is wrong, and for this reason I advise, at least, a digital examination in every case of uterine hemorrhage. I once rode forty miles, in extremely hot weather, to see a wealthy widow in furious flooding, whom I did not suspect

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of an indiscretion, and I had to repeat my visit in consequence of my neglect of the above injunction. I found, notwithstanding the most positive denial of any impropriety, an old placenta lying in the mouth of the womb, and yet if I had not insisted upon making an examination, this bloodless, fainting woman of forty would have let me go away again without having relieved her; therefore I say always examine them, and under all circumstances, and be sure to remove the last vestige of the afterbirth; this I have always been able to do with the index finger of the right, pressing the uterus down with the left hand. I am led to believe that women are allowed to rise and assume their domestic duties too soon after having miscarried, and that serious trouble sometimes arises from this source, remotely if not immediately. Women getting up from these mishaps often complain for weeks of backache, pain in the hip and left side, and these are the cases which result in ulceration or erosion, and hypertrophy, and this to displacements. Local treatment by means of the speculum saves many of them from permanent invalidism, or chronic inflammation of the lining membrane of the cavity may lead to frequent floodings, sometimes alarming in their severity, and always embarrassing. For this condition injections of the iodine co. tr. have been highly extolled, but Dr. A. T. Hudson of Stockton has, on several occasions, met with excellent results and no accidents from an injection of *chromic acid*, followed by a sol. of carbt. potash. Cold water, applied to the abdomen and injected into the vagina was formerly the main reliance of the profession in these hemorrhages, but it is something more than a novelty that where these fail, vaginal or uterine injections of water of a temperature of 110° or 120° F. will not. I have no experience in the remedy, but as applications of warm water in rubber bags to the lumbar region have long been held to be beneficial, I cannot understand why they may not be equally so applied to the inner surface of the womb, especially, as Dr. Athill recommends, in cases of extreme

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exhaustion, where the sedative effect of cold would be hazardous. Among the sequelæ of abortions, and most annoying of them, is the long train of nervous phenomena, hyperæsthesia, pleurodynia, cephalalgia, cerebro-spinal irritation and mania. The present state of our knowledge will not permit us to dismiss these cases with the contemptuous epithet that they are only hysterical. We are importuned and expected to relieve them, difficult as the task may be, and although the method of doing this belongs to another committee, it is my duty to point to these distressing diseases as an inheritance of the vicious practice of criminal abortion.

All the cases, without exception, of abnormal presentation which have come under my observation, in a by no means large practice, have been in multiparæ, and in women who from moderate circumstances have felt compelled to leave their beds and assume their domestic duties too soon after confinement. Some things connected with these cases have led me to believe that these facts bear some relation to each other, and that to the subinvolution resulting from faulty positions imposed upon the enlarged uterus, the fœtus, in subsequent pregnancies, is made to occupy such relation to the outlet as to cause the preternatural presentation. It might be said that if this was true it would hold good in subsequent births of the same individual; not necessarily, for the hypertrophied condition of a part of the uterus on which it depended, may, in the after process of involution, have disappeared; and again it might not, as was the case in a woman who had given birth to three children without any unusual occurrence. After an interval of thirteen years, living with the same man, and in apparently good health, she had an arm presentation, and I delivered her by version. In two years I delivered her again in the same way, with the same presentation. In less than two years she had a shoulder presentation. I succeeded in changing it and bringing the head within reach of the forceps, and delivering her by that instrument; the natural efforts being wholly insufficient to effect it.

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In this woman there would seem to have been some obliquity of the uterus which may have prevented conception for thirteen years, and which was partially spontaneously corrected, so that she conceived, but not so far restored but that it could have caused the three malpresentations which took place afterward, in each of which the child occupied very nearly the same relation to the mother.

I have regarded chloroform and the hydrate of chloral as great blessings to women in painful and protracted labors not due to inertia, and for several years have made use of the latter remedy with great satisfaction to my patients. Reasoning *a priori*, we might expect that the relaxation attending its use would cause an undue amount of post partum hemorrhage, and a somewhat extended experience with the remedy has demonstrated the correctness of the argument; not to any alarming extent, but I can well imagine that its use in those women who always flow inordinately might be the means of seriously embarrassing the treatment. It would be well in such cases, where chloral has been given, to be on the alert, and to administer, near the close of labor, a decided dose of ergot. With this caution, we have in this remedy efficient and safe means of not only shortening the duration of labor, but of mitigating suffering and preventing shock.

That the fœtus in utero sometimes acts as an irritating foreign body is not, in my opinion, sufficiently impressed upon the minds of students of medicine, either by our preceptors or text books. It is this which provokes vomiting, and in a few instances keeps it up until the woman is exhausted or the fœtus thrown off, and some of us have seen cases of eclampsia, if not all that we have seen, arising from the same source. And the multitude of reflex actions met with in the latter stage of gestation are all due to the same fact. Fortunately the remedies at our disposition are sufficient to control them, but I have in my mind the case of a very lovely woman who was permitted to die of

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exhaustion from vomiting, who might have been saved by emptying the womb. And there are none of us who do not think that our greatest duty in cases of eclampsia—after relieving the pressure on the brain in those cases demanding the lancet, or quieting nervous excitement by opiates, bromides, atropia, and chloral or chloroform in those not requiring it—is to, as speedily as possible, deliver the woman. I regard this of paramount importance, for do what we may to save our patients from the effects of the convulsions, we can rarely hope to stay the latter so long as the child remains in the uterus; and at whatever stage, or however rigid we may find the os, we can always deliver by dilating and puncturing the membrane, and little time should be lost in giving the woman this chance for her life. American obstetric surgeons have long pointed, with just pride, to the operation by Dr. Ephraim McDowell, of ovariotomy, by which, already, thousands of women have been saved, who without it would have died, and we can refer with equal satisfaction to an operation first performed successfully by Dr. Thomas of New York City, and called by him laparo-elytrotomy, from the section of the abdominal walls and vagina, thus delivering the woman, which promises to supersede the Cesarean section. By it the risk from peritonitis is altogether avoided, as that delicate membrane, the peritoneum, is not at all endangered as in the latter operation. The dangers from embryulsion are also spared both the mother and child. That gentleman has reported five operations of this kind, in three of which the mothers were saved, in the other two it was undertaken for the sake of the child, the mothers being moribund. Four of the children were saved, and the fifth had been destroyed by a previous attempt at cephalotomy.

This is certainly a very favorable showing, especially when the condition of the women when operated on is considered; all of them being exhausted by unsuccessful attempts

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to deliver, and consequent long delays, a condition to which the great fatality of gastro-hysterotomy has been very properly ascribed. If, therefore, such results can be got under such extremely unfavorable circumstances, a remedy has been found which promises to reduce to a minimum the dangers of delivery in contracted pelvis, pelvic tumors and every other obstacle *per vias naturales.*

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REPORT OF COMMITTEE ON PUBLIC HYGIENE AND STATE MEDICINE.

BY F. W. HATCH, M. D., CHAIRMAN.

MR. PRESIDENT AND GENTLEMEN OF THE STATE MEDICAL SOCIETY: I congratulate you on the favorable sanitary condition of the State since we last met in our annual convocation, a condition exempt from the inroads of prolonged or severe epidemic disease, and in all respects extremely gratifying. It is, indeed, true, that the reports accessible to the committee have indicated the continuance of the diphtheria, which formed one of the principal subjects for discussion in the last report of the committee, in different portions of the State, but, if we except one or two localities, in a form so modified and so limited in extent and duration, as to justify the most pleasant reflections. It was only at the very close of the year 1878, and during the first six weeks of the present year, that anything approaching the character of a general epidemic was observed, commencing in the form of an influenza, but soon, in some localities and districts of country, putting on the features of asthenic and rapidly fatal pneumonia. This, too, was of comparatively short duration, passing off with the meteorological conditions to which it was in all probability mainly due.

Without, therefore, entering upon a review of the diseases and mortality of the State with the minuteness common in reports from the committee of which I have the honor of being a member, it seems appropriate to devote the time at our disposal to a few reflections upon a subject which, though much neglected, seems to possess great practical interest. I allude to

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THE REGISTRATION SYSTEM.

The importance of a uniform and perfectly authentic registration of deaths has long been recognized. Its value has been accepted by sanitarians, and generally by the medical profession, as presenting the only means for the determination of the many interesting problems affecting the duration of human life, the healthfulness of communities; or, in other words, the value of life in different States or cities, or of parts of these as compared with other parts, and the inducement they afford for settlement, the annual gain or loss to communities, the effective strength of the State, and the other questions which a complete system of vital statistics includes.

But while the value of such a system of registration, and the fact of its vast importance in a social aspect, are thus fully admitted, experience has everywhere shown it to be one of the most difficult possible things to attain, or to so enlist the coöperation of parties necessary thereto, as to ensure its successful working. These parties are, according to the system attempted to be adopted in California, the physicians of the State, the Secretary of State, the County Recorder or Clerk, and the Secretary of the State Board of Health. Whether the latter of these would prove equal to the duties devolving upon him, there is no present means of knowing, that officer not having yet been fairly put to the test. It is believed that the Secretary of State has promptly caused to be distributed the blanks with which he has been supplied. Beyond this, the law requires the County Recorder to distribute these blanks to the physicians of his county, and the latter to fill them up and forward them quarterly to the Recorder.

It is known that some of the county officers have performed their duties faithfully; it is also known that some of them have not. The physicians of the State, some of whom are now present, can answer far better than I can how well their part of the work has been performed. Wherever the fault may lie, however, whether in the law itself, or in those

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appointed to sustain it, the fact cannot be questioned that the law is inoperative, and that we have failed of the benefits expected to be derived from it.

To a small, yet quite appreciable extent, the defects of the Registration Act, so far as it relates to deaths only, have been supplemented by voluntary contributions from a corps of correspondents who have cheerfully, and with commendable regularity, given the necessary time to the work of reporting the mortality of their several localities. Though valueless, or nearly so, as a basis for the construction of vital statistics, or of any sure calculation as to the condition of a population, they serve a useful purpose, in so far as they indicate the prevailing causes of deaths in different portions of the State. The reports received, also, from local Boards of Health, as at San Francisco, Sacramento, Stockton, Chico, Santa Rosa, and some others, afford very material information. We are as yet in ignorance, however, and, under present circumstances, must remain so, of the elements of growth and vigor existing within ourselves, of the effect of our climate, habits of life, social condition, upon the growth or decrement of population—whether, in fact, we are as a State to-day growing in population of our own resources, and independently of the tide of immigration. Do our births equal our deaths? If not, why? Is our climate, taken as a whole, favorable to longevity? To the development of what particular disease does it predispose, and from which are we uncommonly exempt? What particular localities are favorable or dangerous to the two extremes of life—to infancy on the one hand, and old age on the other? These are some of the questions which a perfect system of registration might enable us to answer. Whether we are ever to have such a system in California, rests chiefly with the medical profession. In truth, the information derived from the registration of deaths and births, is, and must always be, the foundation for effective sanitary work. "We must know," said the report of the Secretary of the State Board of Health of Georgia, in 1875, "how many deaths occur, and the dis-

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eases which produced these deaths, and the localities, the atmospheric and telluric conditions which modify them, before we can act intelligently in the line of prevention."

In cities and towns where health organizations exist, it would be comparatively easy to carry out an accurate registration of *deaths* by requiring a physician's certificate to be procured by the undertaker, and by him presented to the Superintendent of the cemetery before burial is allowed. A little trouble would also enable the health officer of towns where no such strict provisions exist, to procure the important facts through the undertaker. It is not so easy, however, to accomplish the registration of *births*. For these, reliance must be placed upon the physicians and midwives; and those who have attempted the task of collecting the facts from these sources in a large city, can properly estimate the difficulties—nay, the extreme reluctance, sometimes, with which the facts are communicated. In small towns through the country, however, where the occurrence of a birth in the community is commonly known to all, or is made, perhaps, the subject of general rejoicing, the work would be comparatively easy, and the results, taken in connection with the deaths, marriages, and population, would afford valuable information as to the vital condition of localities. This, however, is voluntary work—it is the assumption by local Boards of Health of work which the Registration Act requires to be performed through other defined channels. It could not embrace the entire State, nor satisfactorily solve those great questions which concern the vital statistics of the commonwealth, and which, if answered favorably, as there is at present no reason to doubt, might present some of the strongest inducements to immigration. Viewed alone as a question of public policy, the system of registration ought to be encouraged in California; in this light, the subject is one which should enlist the coöperation, not only of the medical profession, but of the public.

The main features of the California law are doubtless familiar to most of those present. They may be briefly

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summed up: Blanks for the use of all physicians are to be prepared by the Secretary of the State Board of Health; these are to be sent by the Secretary of State to the County Recorders, by whom they are to be distributed among the physicians throughout the State; the latter are to make returns to the Recorders, who are required to register the same, and to quarterly transmit a certified copy thereof to the Secretary of the State Board of Health, who shall keep a record of all births and deaths so certified to him, and make a report biennially to the Legislature through the State Board of Health. In the same manner marriages are to be reported by those performing that ceremony. The Recorder, unless he be a salaried officer, is to receive a fee of cents for each.

The Act seems simple enough for easy compliance; it needs only the coöperation of those immediately concerned in sustaining it.

The law of Massachusetts, much more strictly enforced than ours, is more complex. The Clerk of the city or town shall receive or obtain and record and index certain enumerated facts respecting births, marriages and deaths. Parents shall give notice of the births and deaths of their children; householders of every birth or death in their houses; the eldest next of kin of the death of his kindred; keepers of workhouses, houses of correction, hospitals, prisons, and almshouses (with certain exceptions for which special provision is made), and masters of vessels, of every birth or death occurring under their charge; and for every neglect for a period of six months shall forfeit a sum not exceeding $—. Every physician, having attended a person during his last illness, shall, when requested, within five days, furnish a certificate of the essential facts; and for refusal or neglect, shall forfeit the sum of *ten* dollars to the use of his town. Every sexton, undertaker, or other person having charge of a burial ground, or every superintendent of burials, shall forthwith report the facts required to the Clerk of the city or town, and for every return shall receive *twenty-five* cents. The Clerk, when returns are made to him, shall furnish a

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certificate of the fact to the person making it, who shall deliver the same to the person having charge of the burial; and when any burial shall take place without the delivery of a certificate, the person having charge of the interment shall notify the Clerk, under penalty of twenty dollars. The Clerk is to make certified copies of his records to the Secretary of State, which records shall be *prima facie* evidence in legal proceedings; he shall receive from the city or town, for certifying a birth, *fifty* cents; a marriage, *eighteen* cents; a death, *twenty* cents for the first twenty, then *ten* cents; but in cities of over 20,000 population these fees may be regulated by the local authority. For each neglect of duty he shall forfeit not less than *twenty* nor more than one hundred dollars. Blanks books for the required records are to be issued by the Secretary of State, to be distributed by the Town Clerk. Tabular results prepared from the returns shall be made and reported annually to the Legislature.

This is the substance of the law.

It is complained by the State Board of Health that it is neglected, and that errors in diagnosis lessen the value of the returns. "To make the law effective," says Dr. Folsom, the efficient Secretary of the Board, "there should be a penalty for burying in any private or public cemetery without a permit." This is the prominent principle now, and for some years past, in force in Sacramento, under which complete returns are made monthly to the Secretary of the local Board of Health. The same provision was recommended by the State Board of Health for adoption by all local Health Boards; and if such Boards were organized, as required by the law, in all incorporated cities and towns, and the section referred to were enforced, a very satisfactory registration could be secured for the greater portion of the State.

The Michigan law, which the distinguished Secretary of the State Board of Health of that State has pronounced to be the best in the United States, unless recently amended, may be summed up as follows: It is the duty of the Super-

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visor of each township, and the Supervisor and Assessor of any city or of a ward therein, between the 10th of April and the 1st of June, to ascertain by actual inquiry or otherwise, the births and deaths which have occurred in their respective townships, cities, or wards, during the year ending the 31st of December of the previous year, and make returns to the County Clerk, receiving ten cents for each birth or death returned, provided that in the city of Detroit these duties shall be performed by persons appointed by the Common Council. Marriages are to be recorded and returned to the County Clerk by any one authorized to solemnize the rite. County Clerks shall record the returns, and transmit a certified copy of the records to the Secretary of State, receiving therefor three cents for each name returned. The Secretary of the State Board of Health is made the Registrar of Vital Statistics, whose duty it is to prepare tabular statements and deductions, and make a report annually to the Governor. Neglect to keep records or deliver certificates of marriage shall be punishable by a fine not exceeding one hundred dollars, or by imprisonment not exceeding ninety days. Physicians and others attending deceased persons, neglecting to report to the Supervisor or Assessor upon application, shall be liable to a fine of not less than ten nor more than fifty dollars and costs of prosecution. The refusal of heads of families, superintendents of workhouses, etc., to give information concerning births, shall subject them to a fine not exceeding fifty dollars, or by imprisonment not exceeding ninety days. Neglect of duty by the officers appointed to carry out the provisions of this Act, shall render the delinquent liable to a fine not exceeding one hundred dollars and costs of prosecution. County attorneys are required to prosecute under this Act.

The State of Connecticut is said by Prof. Lindsley of New Haven, to possess statutes upon this subject "in most respects adequate to the purposes designed;" yet complaint is made of the non-observance of the law by those who should be most willing to give it efficiency. "The essential features of the present laws on the registration of vital

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statistics are," he says, "that there shall be provided and distributed to all persons who are likely to need them, blank forms for the certificates of births, marriages, and deaths; that such persons, viz., clergymen, physicians, midwives, coroners, and all who may be officially acquainted with these wants, shall fill out such certificates on every occasion, and return the same to the Registrar of the town in which such work occurred during the first week of the month next succeeding; also, that the Registrar in every town shall record the said certificates in books prepared and furnished for that purpose. The laws also provide that the Registrars in their respective towns shall obtain the same information for record whenever a birth or death has happened for which no certificate has been returned." The physician, I believe, receives a fee of twenty-five cents for each return made by him.

This reference to statutory laws might be extended, but sufficient has been said to demonstrate the general interest in the subject, and some of the difficulties in the way of obtaining complete reports. One of the remedies suggested by Dr. Lindsley is that to which allusion has already been made—the prohibition of burials without a written permit from the proper authority.

It cannot be too strongly urged upon the different local Boards of Health to adopt and enforce that section of the "Rules" which refers to this subject; nor can the medical gentlemen of every incorporated town or city do more to promote success, or more effectually further the local interests, than by insisting upon the organization of such local Boards wherever the authorities have failed in their duty to establish them. When the importance of vital statistics is once fully appreciated by the physicians of the State, and, through them, by the public, success will crown the efforts made to perfect the system; let every physician do his full duty in this regard, and such an appreciation on the part of the unprofessional, though possibly of slow growth, will ultimately prevail.

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But however important the registration of deaths may be, taken especially in connection with that of births and marriages, it is very far from conveying a correct idea of the diseases prevalent in a given section of the country. It reaches only those diseases which have a fatal termination, but leaves us in ignorance of that large class of maladies which, thanks to a better knowledge of their nature and tendencies, to a more rational treatment, to a more perfect hygienic management, seldom figure in our mortuary tables. These diseases, it so happens, are often members of the very class about which sanitary medicine is chiefly concerned. They belong to what are usually regarded as being preventable diseases, or, if not positively preventable, at least capable of being essentially mitigated. They are often local, and traceable to a local cause, and at other times spread over wide areas, sweeping over helpless households with resistless fury. They are the endemics and epidemics of the country, against which the labors of the sanitarian are continually directed, and which it will be his proudest achievement effectually to stamp out. To this class belong whooping-cough, measles, influenza, or catarrhal fever, which frequently prevail for weeks in succession in particular localities without occasioning a single death. Even during the last two years, scarlatina has been reported from several localities by the correspondents of the State Board of Health without ever appearing upon the lists of mortality for these places. A stranger to our climate and State in their different subdivisions, on carefully examining the records of deaths for the entire State, if such a complete record were obtainable, would never for a moment imagine that such a disease as intermittent fever could be at all prevalent in California; or if, perchance, he should find a few cases indicative of malarial influences, he would be quite as likely to find them in the records of those sections of the State in which intermittent fever seldom or never originates, as in its favorite abiding place in the Sacramento and San Joaquin valleys.

To obviate this condition of things, to correct the false

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impressions which grow out of them, and to lead to a more accurate knowledge of existing local influences, the

REGISTRATION OF DISEASES

Was some years ago proposed and commended both in Europe and in our own country. The plan has been with some success put into operation in Massachusetts and in Michigan, and to a limited extent in California; and, since the adoption of the postal card blanks, has been gradually advancing in favor, and even now admits of some useful deductions. These cards present several advantages over ordinary *blanks*. They are convenient, and involve no expense to the reporter; the names of diseases from which reports are desired are printed on the card, and as all that remains to be done is to indicate by figures the number of cases of each disease occurring under the observation of the reporter, the trouble and time required are reduced to a minimum. The diseases specified are *nineteen* in number, selected from the zymotic class—from those diseases which are supposed to arise from, or whose development is at least favored by local influences, and over which sanitary measures are commonly thought to have more or less control. It matters little, for the purposes of these reports, how many cases of fracture, how many of cystitis, how many of delirium tremens, or of toothache, may have occurred in Sacramento, for example, during any given month. Such information conveys no conceivable idea of the healthful or unhealthful influences prevailing there.

For the success of the system thus briefly explained, the voluntary coöperation of the profession is needed; and I know I may take the liberty here of expressing, in the name of the State Board of Health, its acknowledgments to those who have so kindly and generously aided by their contributions.

One thing seems to have prevented its more general acceptance—a mistaken idea as to its object and scope. It is not desired to know the precise number of cases of any zymotic disease occurring in a given locality, but to know

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which, or how many, of the class prevail; differing in this respect from what is expected of reports of mortality. Hence, it is not sought to multiply reporters in any one locality, so much as to multiply the localities represented. A single physician, engaged in active general practice, is usually able, except perhaps in large cities, to convey correct information as to the presence of any one or more of the zymotic diseases. He will commonly meet with scarlatina, for instance, when it prevails there, and from the number of cases, from month to month observed, compared with the whole number of all zymotic diseases for the same period, it will be easy to obtain the ratio or percentage of its prevalence. An annual table or chart based upon this principle, and embracing all the towns, would be interesting and profitable. In large cities, a reporter might be required for each municipal division. The important point is to secure the services of the best physicians, as well on account of the extent of their observations, as for the accuracy of their diagnosis.

A system of disease reports, such as has been thus briefly sketched, introduced into all, or even half, of the towns and settlements in the different well-defined geographical districts of California, would eventually supply a more accurate index to the relation of these different districts to disease than can now be obtained from all other available sources. Were it practicable, as has been done in Massachusetts and Michigan, to reduce these reports to weekly intervals, their utility would be greatly enlarged; they would then become signals of warning, giving notice not only of the presence of an epidemic in any locality, but of its extent, the course and direction it is pursuing, the rapidity of its progress, thus affording time to those in the line of its march to adopt such sanitary precautions as circumstances may require.

But, even with *monthly* reports upon this subject, regularly and systematically made out, much good may be accomplished, as before alluded to, in throwing light upon

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the healthfulness of localities and the climatic influences of different sections of the State.

In view of the importance of this whole subject, the writer, as one of the Committee on Public Hygiene, feels justified in submitting it to the attention of the Society, in this annual report, with the hope that some means may be devised by which the registration at least of births, marriages and deaths may be fully and generally secured.

If the law is not satisfactory, let us procure its amendment. At any rate, let us not, as a profession, be behind hand, or indifferent, in a work which has enlisted the active sympathies of sanitarians in every country, and from which will flow results so profitable to us and so important to the future of the State.

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REPORT OF COMMITTEE ON MEDICAL TOPOGRAPHY, ENDEMICS, ETC.

BY H. NEAL, M. D., CHAIRMAN.

LADIES AND GENTLEMEN OF THE MEDICAL SOCIETY OF THE STATE OF CALIFORNIA: At the close of our last annual meeting I was requested by our worthy President elect to write an article on the county in which I live, and promised to try and do so.

I was soon a good deal surprised to see the announcement of my name as Chairman of the "Committee on Medical Topography, Endemics," etc., for the whole State, and feared that the presiding officer had made a mistake.

I have not attempted any report on the State at large, but have tried to make good my promise and have kept myself within the County of San Benito as a large enough field.

I take pleasure in being able to report to the Society that the members of this committee have each one contributed a short paper on the several localities where we live—and are all in attendance here except Dr. Fenn of San Diego.

I respectfully submit to the Society the following titles of papers, with the request that they be referred to the Committee on Publication, viz: "Topography and Climatology of Lake County," by Dr. H. J. Crumpton, of Lakeport. "Medical Topography and Endemics of the Southern Part of San Joaquin Valley," by Dr. J. T. Wells, Bakersfield, Kern County. "Medical Topography and Endemics of Merced County," by Dr. W. A. Washington, of Merced. "San Diego as a Health Resort," by Dr. C. M. Fenn, San Diego. "Medical Topography of San Benito County," by

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Dr. H. Neal, Hollister. "Medical Topography and Climate of Santa Clara County, and Sewerage and Diseases of San Jose," by Dr. M. M. Chipman. The last name was not on the committee, but the paper was offered by the author and accepted by the Chairman.

MEDICAL TOPOGRAPHY OF SAN BENITO COUNTY, BY H. NEAL, M. D., OF HOLLISTER.

San Benito is one of the new counties of California. The territory within its limits was separated from the County of Monterey, and erected into an independent county by an Act of the Legislature of the State at the session of 1873–4. It was named San Benito, after the name of its chief water-course. The county has mainly natural boundaries, formed largely by the mountain ranges between the summits of which it lies. Those are members of the coast system of mountains. The Mt. Diablo range lies to the northeast, dividing it from Merced and Fresno Counties on the east or San Joaquin Valley side. Another member of the coast system, known locally and on some maps by the name "*Gabilan*," forms the southwestern boundary, separating it from the Salinas Valley in the parent County of Monterey. The water-shed of both mountains forms the legal line of separation from adjoining counties, east and west. As the two ridges approach each other towards the southeast, the county runs to somewhat near a point at the southeast end. The southern limit of Santa Clara County, formed in part by the Pajaro River, makes the northern or northwestern limit of San Benito. Its boundaries having been adopted from the work of nature, the outlines of the inclosed territory are very irregular, as might be supposed. Its greatest length stretches from northwest to southeast, and is a little more or less than seventy miles, and is nearly included within the 36th and 37th parallels of north latitude. From the summit of the Mt. Diablo range on the east to

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that of the Gabilan on the west, is about thirty miles at the widest part, which is near the northern end of the county. It has no seacoast, though approaching near to Monterey Bay at the northwest corner. The area of the county is about 1,000 square miles, very little more or less. This is pretty nearly equally divided between valley, foothill, and mountain lands, with a slight preponderance of the latter. The town of Hollister was selected by the citizens as county seat, though situated near the northern end of the county. The population of the county, estimated by ratio of five to each voter, is between five and six thousand—probably nearly six thousand in number. Of this number about two thousand are residents of Hollister. The inhabitants are engaged mainly in agricultural pursuits and the raising of stock. Wheat is the main product of the cultivation of the soil. A few are engaged in mining operations, which produce some quicksilver and antimony. The usual variety as to the nativity of the people obtaining in most parts of California is found here. The Western and Southwestern States are largely represented. French, Italians, and Portuguese, predominate among Europeans. The native Californians, of Spanish descent, are numerous, but are, perhaps, not increasing in numbers in the county at this time.

As the mountain ranges bounding either side of the county are but a continuation of those rising on either shore of the Bay of San Francisco, and on the sides of the Santa Clara Valley, so also the valley embraced in San Benito County may properly be considered as a prolongation of the better known Santa Clara Valley, surrounding San Jose, which, after having lost some of its width and increased somewhat its elevation between San Jose and Gilroy, in Santa Clara County, widens out again and dips into a large open basin in its further course to the southeast. The larger part of this depression of surface and widening out of area lies within the County of San Benito,

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and forms its chief agricultural resource, as it is estimated among the best wheat land in the State.

The word basin is a proper term here, for the drainage of this region does not fall into the southern end of San Francisco Bay, as might be inferred from the statement above made, that the valley is continuous with the Bay of San Francisco, as lying between the same lines of upheaval. But the side of the basin has been carried away next the ocean, thus affording exit for the waters coming into it, which otherwise would find their way to San Francisco Bay near San Jose, by the washing away of a low summit north of Gilroy. Appearances indicate that at one time this was going on.

The first break in the outer line of coast mountains south of the Golden Gate, occurs at the northwest angle of San Benito County, at which point the Pajaro River passes through the barrier, which seems, at some period, perhaps not very remote from the present, to have yielded to the accumulation of waters in the basin above or on the land side, letting them flow by a course of a few miles into the Bay of Monterey, which at this point approaches near to the depression in the mountain line above described.

The San Benito River has its rise near the southeastern end of the county, pursues a nearly middle course through the county, and after having flowed its whole length, gathering to itself almost the entire drainage of the county, joins the Pajaro near the point where it finds its way out of the basin through the gap above mentioned. The Southern Pacific Railroad, in its course into the Salinas Valley, follows the course of the water through the mountain after passing Sargent's Station.

There is much to be seen hereabouts, to bring the mind of even a common or careless observer to the conclusion above reached, that this basin was once filled with water. Numerous beds of washed gravel, pebbles, and bowlders of formations foreign to the surrounding strata, are mixed with sand-bars, and the whole lie scattered about and evidently deposited by the action of water, but too high up,

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in many instances, to be affected by any stage of the waters of the present age. The petrified remains of whales and marine shells found in many places in the county, is evidence that the water must have been salt.

Casts of clam-shells are found embedded in the strata, and scattered about the surface high up towards the heads of the San Benito River. The writer has himself picked up in the bottom of a washed-out gulch, near the Pajaro River (but among the hills forming the gap spoken of), a segment of the petrified rib of a whale—same as those now caught at Monterey—broken into fragments after having turned to stone.

It would seem highly probable, therefore, that the Bay of San Francisco once extended over this basin, and that its waves met those of the Bay of Monterey over the oozy depths which have since risen to the dignity of wheat fields and gardens surrounding the cities of Hollister and Gilroy. The lowest depression of this basin, as shown by the levels of the Southern Pacific Railroad track, is at the north limit of the county, and may be put down at a little less than two hundred feet above sea level. The railroad track at Hollister is two hundred and eighty-four feet above sea level.

The Mt. Diablo range rises at Santa Ana peak nearly east of Hollister, to a height of 3,578 feet. At this point the mountain summits project out towards the valley, forming a prominent landmark from Hollister and the valley around.

In the same vicinity, but nearer to the center of the range, a point called Mariposa rises to the heighth of 3,680 feet, which is the highest land in the county, though at the edge of its area. I have been furnished with these figures from coast survey notes, by the kindness of Prof. Davidson, of this service. This range abounds in cinnabar in many places, and it is found in paying quantities near the Mariposa peak in this county. Quicksilver and antimony are both found together here, and the medical profession may here find both those much abused "mineral medicines" in

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a state of nature. The western or Gabilan range rises in a sharp peak near the old mission town of San Juan, near the northwest angle of the county. The heighth is nearly as great as that of Mariposa, as measured by the eye, and forms a prominent object from Salinas, Monterey and Santa Cruz, as well as on our own side of the mountain.

San Juan was selected as a site by the Franciscan Brotherhood, and a mission founded there in the last quarter of the last century. Those *padres* were wise in their choice, for there is no finer spot for soil or climate in the county, or a long way outside of it. The church and some other buildings still remain in use by means of repairs of late years. The church was finished in 1795.

The question arises, what has all this geography and geology to do with the medical or sanitary interests of San Benito County? It will readily be seen, that if it be true, that the soil had substrata—had a marine origin, forming at one time the bottom of the sea—it will affect the health of the present inhabitants, favorably or unfavorably, in some degree.

This is especially the case as regards the water supply, which is mainly obtained by digging wells to a depth varying from a few feet to one hundred feet or more. Within the basin, the depth of wells averages about thirty feet, passing through strata of soil, sand and gravel, variable in thickness in different situations, and reaching the water in the town of Hollister, in beds of coarse gravel, mixed with sand, at a depth of about twenty feet. In nearly all of the wells the water is found to be what is called in domestic economy, "hard or alkaline." It probably contains lime, magnesia, and soda salts. No analysis has been made. The water, even in the basin region, varies a good deal, as some few of the wells afford "soft" water. A few others are quite brackish in taste, and this is the case over part of the site of San Juan, though at the other end of the town there is a spring, near the old church, yielding good, sweet and comparatively soft water. The water is mainly considered by the people as good for domestic purposes. It

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furnishes those inclined that way plausible excuse to substitute for steady drinking other fluids more expensive, if not more wholesome. This is not found necessary by the people generally, but it must be admitted that it is too common, and that some of our medical men have been affected by this species of hydrophobia.

Artesian water has been obtained over a few square miles in extent near the coast part of the basin, opposite to its outlet, and six to eight miles north of Hollister, at a depth of about one hundred feet, the flow being abundant and rising above the surface of the ground. Wells have been sunk to a depth of about four hundred feet, five miles west of Hollister, but have afforded no flow of water, while further on in the same direction and nearer the foothills the water has been struck at a depth of about one hundred feet or less, and a flow obtained in several places near San Juan, on the opposite side of the basin, form the first mentioned flowing wells.

The city of Hollister was supplied by common wells until about two years since, when the municipial authorities authorized a corporation to furnish the city water by sinking wells in the same manner as artesian, and pumping the water from them and forcing it into a reservoir on the top of a hill beside the town, and about one hundred feet above the level of the streets. As the wells are only about seventy feet in depth, the water is thought to be nearly identical in its properties with the old wells, many of which are still in use. It has not seemed that the city water has made any difference in the health of the people as compared with the other supply. The city water has been analyzed by Thomas Price, Esq., of San Francisco, to whom I am indebted for the following statement of the solid ingredients contained in a gallon of two hundred and thirty-one cubic inches, viz:

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Carbonate of Lime	7.776	grs.
" " Magnesia	6.928	"
Chloride " Sodium	7.644	"
Sulphate " Magnesia	7.957	"
" " Soda	9.632	"
Silica	1.430	"
Iron and Ammonia	0.127	"
Organic Matter	0.417	"
Total Solid Matter	41.911	grs.
Nitrates and Nitritis	Traces	
Free Ammonia	"	
Albumenoid Ammonia	3-10 part in 1,000,000	

It does not seem that the alimentary canal or urinary organs of those using this water for years past are uniformly affected by it in any special manner so as to attract the attention of either the public or medical men. The Epsom and Glauber's salts shown by the analysis, do not show their peculiar effects upon the bowels. It would seem that the human stomach and urinary apparatus can tolerate a good deal of deviation from strictly pure water and keep within the limits of health, when not *assisted* too much by other beverages "*to keep the water from hurting them.*"

A small valley named Agua Amarga by the native Californians—"Bitter Water" by Americans, affords only water tasting much like solution of Epsom salt, which it would seem to be from its effects on the human economy. The climate is very specially modified by the conformation of the mountains above described. The opening in the coast line of mountains lets in the sea breeze in its season, and in consequence, Hollister and the entire north end of the county has a climate very much like San Francisco, Oakland, and vicinity, though a little further removed from the ocean. From May till October the cooling ocean winds blow over this region almost every day from noon until about 6 P. M., reducing the temperature so as to make it pleasantly bracing for out-door pursuits during this portion of the year, which, but for this cause, would resemble more closely the torrid plains of the San Joaquin on the other side of the mountains. This influence is very well understood by traveling either north or south from Hollister far enough to get beyond the wind current, where the traveler

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will find an atmosphere differing much in temperature from that left behind him only a little distance. The destination of this current seems to be the San Joaquin Valley, which it reaches in great part through a depression in the Mt. Diablo range corresponding to that in the coast line. The effect of this air current on the health of the dwellers here may be said to be favorable in the main. It is invigorating to those in health, and to many seeking health it proves a valuable tonic when taken in proper doses at proper times. Containing nothing of the malarious principle, it proves a panacea for the relief of those suffering from miasmatic poisoning, if they remain long enough within its healing influence.

The antiperiodics can here make for themselves a better reputation (and keep it up too) than in many other places in California. A true intermittent has perhaps never originated within the county limits. For this reason the cinchona alkaloids are less needed here and in less doses than in many other places throughout the State, though found very useful and indispensable at times. That part of the county within the influence of the sea breeze can not be considered as so favorable for the relief of those laboring under any of the stages of phthisis as other parts of the county not remote from Hollister, which stands in a location nearly central in the air current. As San Francisco does not claim to be the best place in California for consumptives, so this county cannot lay claim to it on account of sudden and frequent variations of temperature and humidity within certain limits during at least half the year. I have seen one advanced case of phthisis in a young man coming from a New England State, in which the life of the patient must have been prolonged by a residence near San Juan, though subjected to the climatic conditions above referred to. All the other conditions surrounding him were favorable, but he succumbed in about two years. I have seen a few cases of the disease among the lower class of Native Californians, but along with other constitutional vice. They are familiar

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with the word phthisis as if it had been known amongst former generations of them.

As the rainfall is not so great as in the northern coast counties, the Winters are very open and enjoyable here, as the storms are not so frequent and long continued as to interfere seriously with out-door amusements of those in health or seeking health. In the estimation of the writer the rainy season in this part of California is preferable to the rest of the year for health and enjoyment. I wish here to refer to the record of temperature and rainfall kept by the Southern Pacific Railroad Company at their station in Hollister. The record has been carefully kept by the agent, and gives the maximum, minimum, and mean of temperature for each month as made up from observations taken three (3) times a day for the time embraced between the dates first of January, 1874, and first of May, 1879, with the exception of the month of December, 1875, when the record was interrupted by the burning of the depot buildings. The rainfall has been accurately measured and recorded during the same period. The record is entitled to confidence as kept by a competent and careful observer, Mr. John Kearns of the Southern Pacific Railroad. A tabulation of the whole is herewith submitted as made up at the general office, and promptly furnished at my request, together with the elevation of the railroad level at Hollister, by the politeness of A. C. Bassett, Esq., Superintendent North Division Southern Pacific Railroad:

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TABLE SHOWING TEMPERATURE AND RAINFALL AT HOLLISTER, SAN BENITO COUNTY, FROM JANUARY 1, 1874, TO MAY 1, 1879.

	Temperature.			Rain.
	Max.	Min.	Mean.	
JANUARY.				
1874	64	30	46.29	4.04
1875	61	29	46.85	5.10
1876	61	30	45.49	2.13
1877	78	39	53.98	1.83
1878	66	26	50.34	5.98
1879	67	28	45.29	1.83
FEBRUARY.				
1874	64	34	48.54	0.96
1875	70	38	53.36	0.16
1876	71	34	48.07	2.77
1877	70	40	55.42	0.25
1878	63	40	51.44	6.61
1879	78	27	54.16	1.99
MARCH.				
1874	70	32	51.38	2.51
1875	69	35	52.26	0.50
1876	80	32	49.15	2.63
1877	85	45	59.73	0.53
1878	78	38	54.26	1.56
1879	89	32	57.25	1.90
APRIL.				
1874	80	44	57.07	0.36
1875	88	38	65.12	0.00
1876	86	39	61.90	0.18
1877	81	50	61.50	0.78
1878	83	39	55.90	1.40
1879	79	41	57.37	1.53
MAY.				
1874	88	46	60.92	0.37
1875	95	63	76.99	0.00
1876	84	48	67.51	0.18
1877	80	55	65.19	0.42
1878	90	49	63.55	0.00
JUNE.				
1874	94	50	66.56	0.00
1875	96	64	76.11	0.13
1876	100	58	74 43	0.00
1877	109	56	73.04	0.00
1878	95	48	62.75	0.00

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TABLE SHOWING TEMPERATURE, ETC.—Continued.

	Temperature.			Rain.
	Max.	Min.	Mean.	
JULY.				
1874	92	56	68.26	0.00
1875	95	52	72.71	0.00
1876	94	56	69.66	0.00
1877	98	56	68.98	0.00
1878	87	54	64.27	0.00
AUGUST.				
1874	94	56	68.67	0.00
1875	100	59	74.88	0.00
1876	102	57	70.69	0.00
1877	90	56	66.91	0.00
1878	89	48	62.79	0.00
SEPTEMBER.				
1874	100½	52	68.56	0.00
1875	100	59	75.01	0.00
1876	98	58	68.10	0.00
1877	102	55	69.43	0.00
1878	96	46	64.41	0.00
OCTOBER.				
1874	80	44	60.45	2.33
1875	100	51	68.55	0.00
1876	79	45	62.28	0.88
1877	91	50	64.97	0.00
1878	90	40	59 92	0.29
NOVEMBER.				
1874	70	39	56.66	1.15
1875	74	45	57.02	7.68
1876	72	45	58.31	0.00
1877	75	40	56.79	1.03
1878	80	31	54.33	0.20
DECEMBER.				
1874	67	27	50.37	0.00
1875	No record.	.....	.....	.....
1876	63	32	47.71	0.00
1877	75	31	50.66	1.54
1878	77	21	46.88	0.53

NOTE.—Mean annual temperature for five years, 60.537°.

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The time included in the table embraces the season of 1876–7, in which less rain fell than any rainy season since the advent of the Americans to the country, with the exception, possibly, of 1863-4. It also includes the period of lowest temperature in the judgment of long residents—judging from its effects on vegetation, etc.—and with which the record seems to agree as far back as it goes into the past. The mean annual temperature, as deduced from the five whole years in the record, is found to be 60.5 degrees. This "cold time" of 1878-9 commenced in November, continued through December, 1878, and January, 1879. The lowest temperature was reached in December, showing 21 degrees Fah. at sunrise, at Hollister. Another observer, near San Juan, found it standing at 17 degrees. During nearly this entire "cold time," the wind was in the northwest and continued to blow during the night, and produced the same effects on the organs of respiration that were caused in other places by it, though it did not reach pneumonia in many instances here.

The highest temperature observed by the writer was in June, 1872, when it reached 110 degrees, under the influence of a dry north wind, which sometimes, though rarely, prevails. The railroad record shows a maximum of 109 degrees in June, 1877. It is only rarely that 100 degrees is reached, and this is most likely to occur in the latter half of September, after the time of the sea breeze has expired. It also may occur when the sea breeze is interrupted for a few days, usually three days, which sometimes happens.

Any epidemics which have visited the county seem to have preferred the close of the dry seasons for their visit, and have taken their leave on the coming on of the rainy season. Those epidemics have been few, and of the zymotic class, with the exception of the influenza prevalent during the cold period just referred to above.

Since the residence of the writer in the county, nearly ten years, typhoid fever has been epidemic once in Hollister and vicinity, and diphtheria has visited the same locality twice in epidemic form. The typhoid epidemic of 1872

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comprised a goodly number of well marked and severe cases without many deaths resulting. It took its leave promptly at the coming on of the rainy season late in December that year, and there have been very few cases in the county since, if we may except the practice of an eclectic brother, in which numerous cases are from time to time reported as "broken up and cured"—"*sick and well again*," in the space of a week! The last named cases are not in the above estimate of the disease.

The two epidemics of diphtheria had their beginning with us about the 1st of September, 1877–8 in each year, at which time it was prevailing more or less throughout the State, under all the varieties of its climate, from the sea coast to the Sierra slopes, in widely separated localities, with many other centers of population intervening, free from the disease at the time. It was not marked by any peculiar features here to distinguish it from the same disease elsewhere. The treatment most agreed upon and pursued amongst regular physicians has been based on nourishment, tonics, and stimulants. The two first are administered freely, without regard to febrile symptoms. Beef tea, animal broths, and milk are relied on mainly for nourishment. Good ripe grapes in their season are considered a good article of diet. Tr. ferri chlorid in full doses, frequently repeated, along with moderate doses of quinia four or six times a day, are relied on mainly as tonics. Brandy or whisky given with milk, and pretty freely used as the strength flags, seems to become necessary and proves useful in severe cases. Gargles of potass., chlorate potass., permanganate, and tr. ferri chlor. are used with good effects. This line of treatment has seemed to the writer to make the difference between living and dying in many of the cases in his own and other hands. There were numerous cases of such character that all measures signally failed from the beginning. In the two epidemics extending through the county, but largely confined to Hollister and vicinity, there were about forty deaths out of about three hundred cases of the disease. A number of adults were

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affected by the disease, and two of the deaths reported were adult females.

It fell to the lot of the writer to have a pretty severe attack, in the midst of the second epidemic. This was followed in a month by paralytic symptoms affecting the extremities up to the knees and elbows, and continuing more than a month, interfering somewhat with duties connected with this report.

Although having contracted the disease while in attendance on cases, the writer believes that many of the cases originated from causes other than contagious influence. It has been known at one place to confine itself strictly to a few German families, and at another time and place to prevail only amongst a few Spanish families, though not isolated from other nationalities in either case.

There are no endemic influences at work, as before intimated, at least not of such marked character as to have called forth the attention of the people or their medical attendants as arising from causes peculiar to this locality.

The calculous affections of kidneys and bladder do not specially manifest themselves as might be supposed from the nature of the water used, as shown by the analysis submitted.

TOPOGRAPHY, CLIMATE, AND DISEASES OF SANTA CLARA COUNTY, AND SEWERAGE OF SAN JOSE. By M. M. CHIPMAN, M. D.

Santa Clara County is situated between 36° 55′ and 37° 30′ north latitude, and is fifty-three miles in length, extending northwesterly and southeasterly from San Mateo County, the head of San Francisco Bay and Alameda County on the north, to San Benito County and the Pajaro River on the south. In breadth it varies from twenty to thirty miles, occupying the space between the summit line of the main coast range of mountains on the east, and the summit line of the Santa Cruz range on the west—about three-

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fourths of its area being comprised in the eastern and western slopes respectively and the foothills of the two mountain ranges, and about one-fourth in the intermediate level land or valley. The total area of the county is a little over thirteen hundred square miles, of which the valley supplies much the greatest proportion of the agricultural resources, and contains all but a small part of the population, which is at present estimated at about thirty-five thousand.

Santa Clara Valley extends the whole length of the county, from its northern to its southern boundary. This valley is naturally divided into a northern and a southern division, by the opposite mountain ranges approaching each other about midway its length, and narrowing it down to a breadth of about three miles. The northern part of the valley at San Jose and northward is about sixteen miles in breadth; this division being somewhat the largest. The narrow, intermediate place, is the most elevated, from whence the waters divide, running in opposite directions. The streams of the northern division rise in the mountains on each side of the valley, and make their way with rapid course into the level country, through which they run northward into San Francisco Bay. The streams of the southern division run southward into the Pajaro River, which empties into the Bay of Monterey. There are no large rivers within the limits of this county; and although some of the larger creeks carry considerable volumes of water during the rainy season, yet they either become dry or reduced to quite small streams during the Summer and Autumn months. The incline of the land in the most level parts of the valley, is equal to about ten feet per mile, which is sufficient for good drainage; and there are not many stagnant pools of water left to evaporate during the dry season; and whatever of malarial influences may here generate, are so completely dispersed by the constantly recurring sea breeze, as to prevent the development of any malarious disease, from which there is entire exemption throughout the valley.

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The water used for domestic purposes, except in the towns of San Jose and Santa Clara, is mostly obtained by digging or boring—usually by the latter method. The surface water is of uncertain quality, but the auger is made to penetrate to the depth of from thirty-five to fifty feet, and piping used, and pumps and windmills to raise to the required height; and water obtained in this manner is pure and wholesome.

Around the head of the bay, and extending back to and including the city of San Jose, there are several hundreds of artesian wells in use, the water of which is pure and soft; and also in the southern end of the valley artesian well boring has proved successful.

The general elevation of the western range of mountains is estimated at about two thousand feet, and the highest peaks—Mts. Chonal and Bache, at 3,530 and 3,430 feet, respectively, and Mt. Hamilton, of the eastern range, the contemplated site of the Lick Observatory, is 4,448 feet in height. The higher points of the mountains are, every Winter, more or less covered with snow, and occasionally the fleecy coating, on both sides of the valley, extends for a few days down to within four or five miles of the bottom land, but not enough ever falls in the valley itself to whiten the ground.

The mountains which range along the coast, shut out, in a measure, the cold northwest trade winds, and the Santa Cruz range forms a barrier to the ocean fogs; a sufficiency, however, of the ocean breeze forces its way up the southern arm of the San Francisco Bay to modify the heat of the Summer months, thus producing a mild and equable climate throughout the year. The trade wind, which, immediately upon the coast, is so fresh and cold and moist, in its passage up the bay, by intermixture with the atmosphere of the surrounding country, is somewhat raised in temperature, and deprived of its superabundant moisture, and becomes soft and balmy; in fact, an atmosphere which is so near perfect, for purposes of human respiration and

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animal comfort, that no change could but rarely be desired.

The number of days in which the temperature is in excess of a comfortable degree, is very small, and although the fore part of the day may sometimes become too warm, yet it is very seldom that the sea breeze does not come at midday, bringing with it complete relief; although in the southern end of the valley, the temperature reaches a somewhat higher degree than in the northern. The highest range of the thermometer at San Jose is about one hundred degrees in the shade, and then for one period of only a few days at longest during the season.

The following table exhibits a record of the mean monthly temperature at San Jose, for one year:

Months.	Deg. 6 A. M.	Deg. 12:30 P. M.	Deg. 6 P. M.
June	52.40	77.03	60.40
July	55.32	81.71	64.84
August	53.16	83.74	64.87
September	55.63	79.17	65.10
October	46.48	74.68	63.06
November	34.40	59.77	52.30
December	36.61	53.68	45.26
January	36.68	54.42	48.00
February	38.93	58.32	48.61
March	39.99	62.58	51.29
April	50.37	69.23	54.00
May	48.26	69.90	54.97

The average humidity of the climate of this valley is much less than immediately upon the sea coast. The following table compares the rainfall of San Jose and San Francisco for the last six years:

SAN JOSE.		SAN FRANCISCO.	
Season.	Inches.	Season.	Inches.
1873–4	13.23	1873–4	22.69
1874–5	8.83	1874–5	18.00
1875–6	20.50	1875–6	25.39
1876–7	5.47	1876–7	9.84
1877–8	19.53	1877–8	34.43
1878–9	8.30	1878–9	21.00
Total	75.86	Total	131.35

Which shows the average rainfall at San Francisco to have been about seventy-three per cent. greater than at

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San Jose; and much of the excess falls in light showers, which do not reach Santa Clara Valley; and the number of cloudy and rainy days in the valley is comparatively small.

This beautiful valley, if not equal as a sanitarium to some other localities in this State more famed for such purposes, yet possesses a climate so equable and salubrious that delicate people, those of a consumptive or rheumatic diathesis, or those anæmic persons who are lacking in natural life-vigor to sustain themselves in a more rigorous or more debilitating climate, find here a climatic condition well adapted to their weakened powers, with the pleasant surroundings of beautiful natural scenery, and cultivated and ornamental landscape, together with good society and other social privileges, which tend to keep up a cheerful state of the mind and render life attractive.

In the mountains and foothills, on either side of the valley, Santa Clara County has a climate which is probably adapted to as great a proportion of those cases for which special climatic conditions are sought, as that of any other locality. That part of these mountains most visited as yet by health seekers, is where the road from San Jose to Santa Cruz passes through what is called the warm belt. The warm belt is a region which commences on the east slope of the mountains, at an elevation of about four hundred feet, and extends towards the summit to an elevation of about twelve hundred feet above sea level. The advantages of this location over the valley consist principally in its elevation above the fogs which occasionally prevail in the valley, and generally a still less degree of humidity, and especially during the night, and a more equable temperature during the twenty-four hours of each day.

The Pacific Congress Springs, at Saratoga, about twelve miles from San Jose, possess alkaline and chalybeate properties, and have proved useful as a tonic and in rheumatic affections. These springs are provided with commodious

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and well furnished hotel buildings, and have a pleasant location and an excellent climate.

The water of the Pacific Seltzer Springs, located near the preceding contains chlorides of magnesia and potassa and carbonates of magnesia and soda, and is used in cases of indigestion and hepatic and nephritic affections. The Gilroy Hot Mineral Springs, located in the eastern range of hills, about twelve miles from Gilroy, for some years past has been the principal watering place in this county. The location is in the midst of grand and beautiful scenery, and has a pleasant, sunny climate. These springs have a good hotel with numerous cottages and ample bathing accommodations. The waters, which are abundant and sparkling, have a temperature of 112 degrees, and are strongly impregnated with iron, and also contain sulphur, soda, magnesia and arsenic. Their use has proved efficacious in rheumatic, neuralgic, nephritic, dyspeptic and cutaneous affections, and as a tonic in general debility.

The City of San Jose is situated in the midst of the northern division of the Santa Clara Valley, eight miles from the head of San Francisco Bay, southeasterly, and is elevated about seventy-five feet above tide water. The two principal streams of this division of the valley, viz: Coyote Creek and Guadalupe River, at San Jose, are only a little over one and a half miles part, and the city occupies the space between these streams, and extends about a half mile to the westward of the Guadalupe. The incorporated limits embrace a superficial area of about three thousand acres, and contain a population, variously estimated, at from sixteen to eighteen thousand.

The water for the use of the city is mostly supplied by the City Water Company, and is brought from the canyon of Los Gatos Creek in the foothills of the Santa Cruz Mountains, in iron pipes, and is of good quality. About one-fourth of the citizens, however, use the water of the deep bored wells, and a few are supplied with artesian water.

In regard to matters of sewerage, San Jose is quite de-

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ficient, the system in use having been constructed several years ago, as only a temporary arrangement, which answered its purposes very well at the time, but the great increase in population since, and the spreading limits of the built up portions of the town, have altogether outgrown the system. The main sewer empties its contents into an open ditch within the city limits, in less than a half mile and directly to the windward of a built up district; the odor which is thrown back on the breeze from this source is sometimes quite noisome; considerable portions of the northern and eastern parts of the city have no means of drainage, except gutters or shallow open ditches, and a degree of dampness and moisture at times prevail, which render it unpleasant and unwholesome. It is within these badly drained districts that most of the cases of typhoid fever and diphtheria have occurred during the past year, which should be sufficient warning to the town authorities and citizens to prompt action in this matter. The surface of the land on which the city is built is slightly undulating; the fall towards the bay is sufficient, and there will be no very deep cutting necessary, or rocky or otherwise hard surface to encounter—all of which circumstances are favorable; but the great length of the main sewer or outlet, if extended to a proper terminus, viz.: to some slough of the bay, where there is a daily ebb and flow of the tide, would cost a comparatively large sum; and there is a disposition to study out and adopt some other feasible but less expensive plan for disposing of the sewerage.

Recently several gentlemen, owning contiguous tracts of land from one mile northward of the city limits to the bay, through which a feasible route can be located, have proposed in a written petition to the Mayor and Common Council, that if the city will construct a main sewer to the south line of the lands of the petitioner whose premises are situated nearest the city, that from that point on through, these petitioners will give the right of way for an open ditch, for the privilege of using the sewage when desirable, for purposes of irrigation in cultivating fruits and vegetables.

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Water-carried sewage irrigation is a subject of which but little is known in the United States, and such a proposition seems fraught with impending evil to those who have not either in other countries observed it in successful operation, or read of experiences of older communities in Asia and Europe, in regard to it. An English work, compiled by two civil engineers, Henry Robinson and C. J. Melliss, and published in 1877, shows that the application of sewage to land for agricultural purposes, has been on trial in that country for over a quarter of a century. This work gives a tabular statement, showing the management and working of the system, collected from thirty-two of the principal places where it has been adopted, besides much other useful information upon the subject in detail. And although in that country, in most instances, it has not proved profitable as an investment, yet this account does not show that it is not the least expensive method which could be adopted by those towns to get rid of their sewage, and it does prove that under favorable circumstances and properly conducted, sewage irrigation may be harmless of producing insanitary conditions, either upon the farms where the sewage is used or in the surrounding neighborhoods.

Sewage irrigation in Spain, northern Italy and British India, on a large scale, has been highly useful; and the history of the system in different parts of the old world shows that the favorable conditions for success are a dry and warm climate, sandy or gravelly soil, and a large area of land in proportion to the amount of sewage to be disposed of. The climate of this State is quite suitable for this system, and San Jose, by arrangement with the land proprietors, will possess the other two conditions; there being but one unfavorable circumstance now apparent, viz.: that the drainage must be in the direction which makes it necessary that the irrigated tract shall be to the windward of the town.

The greater number of the English cities which have resorted to irrigation, have acquired the ownership of the lands to which the sewage has been applied, which has

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enabled them to control the management; but in some instances, where the sewage has been sold, delivered through conduits, to neighboring proprietors, the process has been conducted more with a view to pecuniary profits than from a sanitary standpoint, and the situation has been allowed to degenerate into an insanitary nuisance.

The odor given off from fresh excrement, although not agreeable to the olfactories, is much less dangerous to human life than the effluvium which arises from dormant accumulations of the same substance. And I will here suggest that, in preparing to carry out this system, the pipes and sewers should be laid with reference to as rapid transit of the debris and excrement, from the cesspools and privies of the city to the depots of distribution as possible, and thence the sewage should be spread over the land without delay; and that guarantees should be exacted of those to whom it is to be delivered, that it shall not be allowed to accumulate in pools and remain stagnant, to deposit sediment and putrefy.

The following statement, made out from the Oak Hill Cemetery records, commencing with March 31st, 1879, shows pretty nearly the causes of mortality at San Jose during that period:

DISEASES.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	TOTALS.
Phthisis	5	5	7	7	3	3	3	2	3	8	5	2	53
Pleurisy & Pneumonia	3	1	5	...	...	...	2	3	3	2	...	1	20
Diphtheria	...	...	1	4	5	...	1	1	...	...	...	...	12
Typhoid Fever	...	...	...	1	2	1	...	1	3	1	...	...	10
Cholera Infantum	1	1	2	1	2	...	...	...	...	1	...	...	8
All other causes	16	8	8	17	14	8	14	12	21	13	6	11	148
TOTALS	25	15	23	30	26	12	20	19	30	25	11	14	250
Under 5 years of age	5	5	9	10	5	...	3	6	4	6	1	1	55
Died within city limits	9	11	16	17	20	8	13	11	19	23	8	9	164

The mortality from phthisis was much increased by the large number of people who were sojourning, or had settled at San Jose from the Eastern States, who were already affected with or predisposed to the disease before leaving

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their former homes. The number of children under five years of age is exclusive of the cases of stillborn and premature births, of which there were 13. The deaths during the year from causes not already mentioned were, according to the records, as follows: Asthma, 1; apoplexy, 3; alcoholism, 4; accidents, 11; bronchitis, 5; biliary calculus, 1; convulsions, 3; croup, 1; chronic diarrhœa, 1; congestion of the brain, 2; cancer, 3; cancer of stomach, 4; cholic, 2; debility, 1; dysentery, 1; dropsy, 3; enteritis, 8; encephalitis, 1; epilepsy, 1; exposure, 1; fever, 1; gastric ulcer, 1; gastric inflammation, 2; hydrocephalus, 2; heart diseases, 17; hemorrhage, 1; hemorrhage umbilicus, 1; hemorrhage lungs, 2; hemorrhage bowels, 1; intussusceptio, 1; imperforate bowels, 1; inanition, 3; kidney diseases, 3; liver diseases, 5; lockjaw, 1; marasmus, 2; meningitis, 1; murdered, 1; natural causes, 1; necrosis of femur, 1; old age, 1; opium, 1; paralysis, 7; remittent fever, 1; senile gangrene, 1; suicide, 4; scarlatina, 1; starvation, 1; spasms, 1; typhoid pneumonia, 3; thrush, 1; unknown, 4; whooping cough, 4. Of the 250 interments the records show that but 164 were of persons who died within the corporate limits of the city; the others having been brought in mostly from the surrounding country, but twelve, however, of the number were brought from more distant places for interment here. Persons who are so situated as to best understand this matter, concur in estimating that about three-fourths of all the people who die at San Jose are interred at this cemetery, which would give 219 as the figure representing approximately the total mortality for the year, or about thirteen for each thousand of the population.

The Town of Santa Clara is located three miles north and west of San Jose, and has a population, within the city limits, of three thousand. The sanitary conditions are similar to those of San Jose. Its water supply is from the same sources; and since the construction recently of a substantial and capacious main sewer, one and one-fourth miles in length, running centrally through the most com-

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pactly built district, to a creek in the direction of the bay, this is a better drained town than its larger neighbor.

The Town of Gilroy, situated in the southern division of Santa Clara Valley, has about eighteen hundred inhabitants. It is located on level land between the Llagas and Uvas Creeks, being within about five miles of the Pajaro River, and near the foothills of the Santa Cruz Mountains. The water used in the city for domestic purposes is obtained principally from wells bored to the depth of from thirty-six to forty feet, and is of good quality. Water upon being reached at that depth rises spontaneously towards the surface from eight to sixteen feet, and is thence elevated to the required height with pumps.

The incline of the land is insufficient for good natural drainage, and no sewerage whatever has been introduced. The debris and excrement deposited in cesspools is never removed, except by the voluntary efforts of parties concerned, the town authorities paying no attention to such matters. Yet Gilroy, by its natural situation, has two highly favoring circumstances for the preservation of health. The first being that it receives a fair share of the trade winds as they course thorough the valley, and the other in the peculiar geological formation upon which it is located, the top soil being a sandy loam with a gravelly subsoil, which gives it unlimited absorptive qualities; and thus favored the town has remained remarkably healthy and especially free from endemic diseases. Diphtheria has never troubled the place, and typhoid fever has only visited it occasionally with sporadic cases. Pertussis is the only disease which has been endemic in the town at any time during the past year.

The Town of Mayfield, near the northern line of the county on the west side of San Francisco Bay, was, during the year 1878, scourged with an epidemic of diphtheria of a malignant and unmanageable character. For some months prior to January, the disease was manifest there in a few cases, and during the heavy rains of that month the town was flooded, after which the number of cases and virulence

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of the disease increased, and the following Summer assumed the proportions of an epidemic, and although abating in the Fall, it still had continued to linger as late as the 26th of March last, there being two cases in the place at that date. Dr. C. A. Kirkpatrick has account of forty-one cases during the year 1878, nineteen of which proved fatal. I was led by the statements of Dr. A. Milliken, and some of the citizens of Mayfield, to attribute the visitation almost entirely to the overflow and consequent flooding of cess-pools, and contamination of the wells by the impure water from the surface, and the dampness of and evaporation from the undrained soil. But Dr. Kirkpatrick, while admitting that the flood is chargeable with the increase in the number of cases, and the malignant type which the disease afterwards assumed, yet thinks there was an original and unaccounted for cause existing before the overflow, and cites as evidence the fact of several cases before that period, and that he attended a family up in the mountains back of Mayfield, during the time in which four persons in a household of five had the disease, although there were none of the conditions present to which the disease was attributed at Mayfield, nor had any member of the family been at that place for a period of two months previous to their sickness.

The country to the westward of Mayfield is higher than the location on which the town is situated, and roads have been constructed, and farming improvements made, without due regard to the water outlet during the rainy season, and until this shall have been remedied, the place will continue to be flooded at every unusually heavy rainfall. A capacious ditch, so located as to receive the water from the adjacent back country before it reaches the town, and conduct it to a slough of the bay, is the principal requirement, and with smaller ditches and gutters leading into it would give sufficient drainage. But the acquiring the right of way, and excavating the main ditch, appears to be a work of considerable magnitude for Mayfield, and last Fall surveyors were employed by the Supervisors of Santa Clara

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County to make a survey, and they reported quite sufficient fall for the purpose, and that it would insure protection from overflow, but nothing has been done since.

SAN DIEGO AS A HEALTH RESORT. BY C. M. FENN, M. D.

The chief climatic desiderata with regard to the invalid, are equability and stability. The first feature, defined climatologically, implies a thermal standard of about 60°, which experience has proved to be best adapted for either the preservation of health, or for its restoration when impaired. Together with this there should be equability of moisture or humidity. The winds should be constant or not too variable. And as the character of the soil plays such an important part in the salubrity of any locality, the ground must be capable of rapidly absorbing dampness, and drying quickly after rain. Some portions of Massachusetts, that hot-bed of consumption, are said to be practically exempt from phthisis, owing to this property of the soil. Freedom from malaria and from the usual epidemics are also essential requisites. As small capitalists proportionately suffer most in times of panic, so do invalids run a greater risk in the presence of epidemics. The second feature, stability, is of even paramount importance. A climate which fulfills all the requirements enumerated for a brief season, for Winter or Summer only, is practically useless to a large proportion of the infirm. The process of acclimation is slower when the system is impaired, though none the less unavoidable. Hence, a chronic malady requires a chronic climate! Let us apply these laws to one of many notable localities in the State.

The City of San Diego, situated in latitude 32° 41′, longitude 117° 12′, is the extreme southwestern outpost of the United States. To the north lies a State, covering nearly 9° of latitude and longitude—a very mother of climates—the waves of the Pacific, that great equalizer of

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temperature, lave its western shore; the desert to the eastward is separated from us by more than sixty miles of valleys and pine-capped mountains, while to the southward a strip of Mexican territory calmly awaits American destiny. Having such a geographical position, such an environment, is it any marvel that San Diego's isothermal line has not yet been found on the Atlantic seaboard, or that its climate is "sui generis," if not incomparable? With an altitude of sixty feet above the level of the sea, and a landscape gradually descending toward the bay, its drainage is natural and sufficient. A soil of decomposed or disintegrated marl (sand and clay), with comparatively little irrigation, yields all the vegetation desirable in a health resort, since "luxuriant vegetation, though agreeable to the senses, may merely mean high temperature combined with moisture—conditions not favorable for pulmonary affections." Endemics and epidemics which depopulate other portions of the globe, do not tarry here. Malaria, zymotic diseases, and the peculiar vicissitudes of certain seasons, from which even the sojourner at Mentone or Florida must flee as from the plague, are here unknown. Once acclimated, the confirmed invalid may here indefinitely prolong his life, while the robust may luxuriate in Summer skies until life becomes monotonous. That this is no fancy sketch, a few meteorological facts gathered from the records of the Signal Bureau will sufficiently prove.

For the six years ending with 1878, a period selected solely for the correctness of its data, the annual mean temperature has been—

60°2′	1873.	60°8′	1876.
59°4′	1874.	62°1′	1877.
61°6′	1875.	60°3′	1878.

Daily extremes at different seasons: Winter, 25°; Fall, 29°; Summer, 16°; Spring, 26°. During 1876, the data of which I have been permitted to compute, the annual mean variation between day and night was 13°1′.

The table comprising the twelve months of 1875, strikingly exhibits the constancy of the winds in this locality; a

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northwest breeze prevailing for seven months and a west wind during the Spring and Summer.

In this connection it is proper to remark that as the heat of our Summer days is never oppressive, so are the nights cool and refreshing. At about 2 P. M. the maximum of temperature is reached, the sea breeze meanwhile and for apparent reasons having attained its greatest velocity. The result is that one balances the other so that neither becomes excessive. At 9 P. M. the order is reversed, the earth radiating its acquired heat, and giving rise to a land breeze which takes the place of that which prevailed during the day. For the same period the average readings of the hygrometer give us the following table of mean relative humidity:

72.9	1873.	72.5	1876.
76.	1874.	70.8	1877.
75.1	1875.	72.9	1878.

The average barometric readings for the time stated were—

30.011	1873.	30.017	1876.
30.022	1874.	29.999	1877.
30.033	1875.	30.001	1878.

In the immediate vicinity of the city the average annual rainfall is ten inches, the quantity largely increasing with the distance from the coast. For a period of thirteen years this amount has been distributed through the seasons named below, the figures expressing in inches the mean of rainfall; Spring, 2.02; Summer, 0.45; Autumn, 1.48; Winter, 5.21. During six years the average mean of rainy days is shown to be 43.

As a fitting finale to the meteorological features of this remarkable climate, attention is called to the following summary of the local observations for the entire year of 1875. It will be observed that it is the center of the cycle which we have been considering. The small number of cloudy days, 44, is worthy of special note. Among the general remarks of the observer, omitted from this table, he refers to the cloudiness of April and the high temperature of August as "unusual."

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DATE.	BAROMETER. Mean of local observation	Mean of telegraphic obs. A. M. observation	Mean of telegraphic obs. P. M. observation	Mean of telegraphic obs. Night observation	Range. Highest	Range. Lowest	Range. Difference	THERMOMETER. Mean of local observation	Mean of telegraphic obs. A. M. observation	Mean of telegraphic obs. P. M. observation	Mean of telegraphic obs. Night observation	Range. Maximum	Range. Minimum	Range. Difference	WIND. Prevailing direction	Number of miles. Noon to 6 P. M.	Number of miles. 6 P. M. to midnight	Number of miles. Midnight to 6 A. M.	Number of miles. 6 A. M. to noon	Max. velocity during month	Total	Am't Rain & melted Snow. Amount in inches	Number of days on which rain or snow fell	Hot and cold days
1875.																								
January	30.09	30.09	30.08	30.10	30.29	29.56	.633	53.1	49.2	58.6	52.6	68	42	26	N E	1356	723	686	861	23	3626	2.38	8	1
February	30.10	30.10	30.07	30.10	30.26	29.79	.572	54.1	49.9	59.8	54.1	70	44	26	N W	1374	520	578	658	23	3130	.37	3	4
March	30.10	30.10	30.09	30.10	30.36	29.81	.557	55.0	49.0	61.4	54.5	71	39	32	N W	1338	737	827	967	26	4369	.45	3	4
April	30.05	30.05	30.04	30.05	30.38	29.89	.492	58.0	52.5	63.7	57.3	77	39	38	W	1806	749	680	1094	26	4329	.12	2	3
May	29.97	29.96	29.97	29.98	30.09	29.87	.217	62.9	58.5	67.6	61.6	82	50	32	W	1677	707	524	1070	20	3978	.20	3	5
June	30.00	30.00	30.00	30.00	30.13	29.89	.246	64.9	60.7	69.7	63.3	77	53	24	N W	1829	787	575	1228	16	4419	.02	1	1
July	29.99	29.99	29.98	29.98	30.09	29.90	.183	68.3	65.3	72.6	66.9	79	62	17	W	1985	824	502	1217	16	4528	.00	0	9
August	29.94	29.94	29.93	29.94	30.07	29.85	.223	71.3	67.9	75.6	70.2	83	64	19	W	1719	669	369	1110	16	3867	.21	1	1
September	29.97	29.97	29 96	29.97	30.13	29.84	.279	67.6	64.9	71.6	66.6	88	59	29	W	1835	577	409	943	20	3764	.39	2	6
October	29.99	29.98	29.96	29.99	30.17	29.79	.377	67.3	61.8	73.2	66 5	88	53	35	N W	1519	461	379	836	16	3195	.00	0	2
November	30.08	30.07	30.06	30.09	30.23	29.75	.279	60.2	56.3	65.4	59.3	78	50	38	N W	1766	695	713	859	20	4033	2.25	7	3
December	30.09	30.09	30.06	30.10	30.36	29.82	.534	56.6	51.7	63.2	55.7	75	38	37	N W	1392	771	766	960	32	4389	.41	3	5
Annual Means.	30.03	30.03	30.02	30.04	30.21	29.84	.374	61.6	57.3	66.9	60.7	78	49.4	29	N W	1675	685	584	984	21	3969	6.80	33	44

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Leaving the domain of figures, a few general facts may not be out of place.

Besides a great variety of flowers and grasses, some indigenous, others imported by the priests more than one hundred years ago, many valuable medicinal plants are found here. All the ornamental shrubs and flowers susceptible of cultivation anywhere, take kindly to this genial soil. The Australian gum-tree (eucalyptus globulus), and the Mexican pepper-tree (schinus molle), vie with each other in adorning the several thoroughfares and affording a grateful shade. The orange, lemon, olive, and semi-tropical plants generally, flourish here as if in their native soil.

The city is well supplied with pure mountain water, conveyed in pipes from the river. A hotel, second to none south of the Pacific metropolis, with others of lesser note, offers to the sojourner all the comforts of a home at reasonable rates. The population, derived chiefly from the Eastern and Middle States, is noted for its intelligence and hospitality. The invalid visitor, therefore, associated with those of his "own tribe and speech," will not be under the necessity of acquiring a foreign language while in the pursuit of health.

There are duties, however, which the patient owes to himself and to any climate which he may select for trial, a few of which I venture to suggest. If attacked by any of the maladies which require change of residence, and he is able to go abroad for climate, let him not "wait upon the order of his going." To look upon such localities as dernier, rather than health resorts, is a custom founded in error and fraught with danger. If a paterfamilias, he should bring his lares and penates with him, that there may be no "sighing for the fleshpots of Egypt." If possible, no business should be left unfinished to harass his mind and retard recovery. In the absence of his family physician, let him at once place himself in communication with some one of the medical men of the locality, who will induct him into the peculiarities of his new home. To

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proceed without such counsel would be like speculating in real estate without consulting the records or an agent. And having found a congenial locality, he must make it an abiding place for years if not for life; at least until his system has been completely regenerated. How many physicians in this State have seen their Eastern patients, while on the high road to health, return to their old haunts on business or pleasure, only to be stricken down irrevocably. They may betimes succeed in reaching California again, but the fiat has gone forth and death is at the door! Many have passed away who might to-day have been in the enjoyment of that health restored, of which we have multitudes of *living* examples!

TOPOGRAPHY, ETC., OF LAKE COUNTY. BY J. H. CRUMPTON, M. D.

Dr. H. NEAL, Chairman of Committee on Medical Topography, etc., of State Medical Society:

DEAR DOCTOR: Your reminder of my being a member of your committee is received. Owing to other claims on me, I will not be able to do justice to the importance of the subject. I will confine my effort to a brief description of a very interesting section of country, which seems to be almost unknown to many old Californians. The most I hope to accomplish is to furnish a few items of sufficient interest to be absorbed into your own report, instead of making this a separate paper.

LAKE COUNTY occupies an immense basin in the Coast Range of mountains—has an area of about 1,450 square miles, most of which is mountains, with some fine valleys interspersed. The county seat, Lakeport, is about one hundred miles north of San Francisco. Before the construction of several fine roads across its mountain barriers to this section, there was complete isolation from the outside world, a condition not distasteful to many early settlers, who, for reasons satisfactory to themselves, desired removal

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beyond the confines of civilization. But all this has changed, as at Calistoga, Cloverdale, and Williams, we reach railroads by daily stage lines running into this county. Owing to similarity of scenery, this is not inaptly called the Switzerland of America, which, with its fine climate, (Summer temperature, 75°–80°; Winter, 40°–46°) the great number and variety of its mineral springs, and the abundance of fish and game, is making this a popular resort for health and pleasure seekers. The county is named from the lake within its border. Clear Lake is about thirty miles long, and about ten miles wide opposite Lakeport; area about eighty-two square miles—having several steamboats plying between different points on its border. Among the smaller, are the Blue Lakes, "*three sparkling gems linked together*," making with their mountain bordering, a fine view. These lakes, as well as the mountain streams flowing into them, abound with fish. It is hard to answer the query, "What are the prevailing diseases?" 'Tis true we doctors have work to do, and the graveyards fill up. We have a few cases of Autumnal fever, following *dry* Winters—of typhoid fever and pneumonia; but the most of our work is among children with ailments resulting from cold or dietetic imprudence, calls incident to parturition, surgical, and old chronic cases coming in from abroad, to try the virtue of some one of the medicinal springs. Some years since, our faithful Secretary of State Board of Health sent out to the profession generally, a circular containing the following among other queries, which I beg leave to append with my answers thereto:

Sixth—What, according to your observation, has been the effect of your climate upon the early stage of phthisis? Answer.—Remarkably good, owing to the sheltered position, shielded from the raw, damp coast wind, with few sudden atmospheric changes, an almost entire absence of fog.

Seventh—What have been its influence upon the second and third stage of that disease? Answer.—Many cases are greatly improved, life materially prolonged; a few appar-

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ently, permanently relieved. One important element of improvement being the restoration of the digestive powers.

Eighth—What is the most favorable locality for consumptives in your vicinity, and the most suitable season for residence there? Answer.—On the sunny slopes near the lake during Winter, and to climb among the pines during Summer, where there is an abundance of pure, cold spring water, fish and game.

Clear Lake is at an elevation of upwards of 1,500 feet above tide water, surrounded by fine valleys, extending back to mountains which ascend in some instances to near the perpetual snow line. This is the asthmatic's paradise!

Referring to the above, Dr. Hatch says: "This is the region of country which it has been my custom to recommend to the invalid in the early period of phthisis, or even at a slightly more advanced stage, when the strength of the patient will endure the fatigue incident to camp life and exercise, both of which I regard as indispensable. The whole range of country abounds in eligible spots for camping among the pines in the vicinity, of game and easily accessible trout streams. Even females accustomed to the delicacies and comforts of city life, have not unfrequently laid aside the habits of fashionable formalities, and cheerfully resigned themselves to the quiet duties of the camp, enjoying the wild beauties of the hills and pleasant amusements for which nature has so abundantly provided. So much for the Summer and Autumn months; yet I am convinced that many unable to bear the expense necessary for a removal to the southern coast during the Winter, will find the climate at that season agreeable and healthful. The temperature near Clear Lake is never cold enough to be objectionable; the atmosphere is pure and bracing; while the rains, while they may interfere with the solid enjoyments of the camp, are never so continuous as to render active out-door exercise, for the greater portion of the season, impracticable.

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REPORT ON INDIGENOUS BOTANY.*

BY W. P. GIBBONS, M. D., OF ALAMEDA.

In the United States Land Office Report of 1868, the State of California is computed to contain 188,981 square miles, or about 121,000,000 of acres. These are divided into 40,000,000 acres of arable land; 35,000,000 of grazing; 10,000,000 of arid surface, of which 9,000,000 are susceptible of cultivation; 5,000,000 of tule, or overflowed, which can be reclaimed; 5,000,000 covered with lakes, rivers, bays, and other bodies of water; and 26,000,000 of rugged and mountain land, heavily covered with timber. More recent and extensive surveys, and more exact estimates from the United States Surveyor General's Office in San Francisco, have determined that the area of the State is 157,801 square miles, or in round numbers, 20,000,000 of acres less than the foregoing compilation. I believe, from best authorities which are accessible, those who have traveled over the Sierras and its foothills, in which I include my own excursions along one-half of the range, that there are less than 12,000,000 acres of accessible forest growth in the State. This question, however, I do not propose at present to discuss.

The surface geology of the State is determined by two ranges of mountains. The Western or Coast Range Moun-

*Parts of this paper were written in 1870 and 1872, and portions published in the "Overland Monthly" and in the "Pacific Medical and Surgical Journal." It is reproduced here, but not in full, as a preface to a work on the "Medical Botany of the Pacific Coast," which the author has been working at for several years during respites from professional duties, and which he hopes to have in some tangible form, at an early day.

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tains commence in the northern part of the State, and extend southeast along the coast about 550 miles; thence curve easterly and join the Sierra Nevadas, having a varying width from forty to sixty miles. At the Bay of San Pablo, they divide into three ranges, one extending along the ocean line, one along the eastern side of San Francisco Bay, and the third having Mt. Diablo as an eastern limit, with its range parallel to the others. Thus is recognized the first, second and third Coast Range Mountains. Except where separated by San Francisco Bay and San Jose Valley for about seventy-five miles, the area between these prominent ranges is filled in by small valleys and hills from two hundred to eight hundred feet high, and being within the line of daily fog precipitation, it forms one of the most fertile agricultural sections in the State.

The Sierras enter at the north of the State border, and with the Coast Range, form a mass of mountains two hundred miles wide from the ocean to the western edge of the State, and extend one hundred and fifty miles south, before diverging to form the northern boundary of Sacramento Valley. Thence they trend southeast for nearly three hundred miles, with a width from sixty to seventy miles, and turn westerly to unite with the Coast Range Mountains, and form the southern extremity of Tulare Valley.

As thus located, the two ranges of mountains inclose a basin or valley 420 miles long, with an average of about fifty miles wide, containing over 21,000 square miles, or near 13,500,000 of acres, all of which is nearly level with tide water, and is essentially without trees. True, there are sparse growths of quercus agrifolia, quercus lobata and quercus sonomensis on the uplands, and of cottonwood, buckeye and willows, along the course of streams and on swamp lands, but the aggregate growth is too insignificant to be spoken of as forests.

Of the 5,000,000 of tule and overflowed land, and of 9,000,000 of arid surface, which can be reclaimed by irrigation, three-fourths or 10,500,000 are contained within the great valley of which we have been speaking. From

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the early settlement of the State this valley has been known as a malarial region. The annual rainfall within its boundaries, is generally much less than that on the foothills or along the coast range. Portions of it receive sufficient to perfect growing crops every year; but through its entire area the average does not exceed four or six inches of water. To overcome this uncertainty, a system of irrigation has been in partial operation for some years, with highly satisfactory results. The soil has proved to be marvelously productive, and farmers have congratulated themselves on being able to overcome the one great difficulty to successful agricultural labor throughout this basin. Unfortunately, however, with the irrigation of the soil, there has been developed new localities of malarial fever, and the conclusion seems to be inevitable, that one is a sequence of the other.* Observation has established as facts, that excess of water in soil produce currents which either carry off the poison or dilute it to the extent of rendering it innoxious; and that a lack of water abstracts a necessary factor to vegetable decomposition, and prevents the development of the poison germs. It is between these extremes that the forces operate which develop paludal fevers. There must be present, however, a continued temperature above 60° to establish the condition necessary to produce vegetable decomposition and miasm. All these conditions are to be found throughout the great valley, and in some other parts of California. For a distance of over three hundred miles long and fifty miles wide there are neither trees nor mountains to divert or retard the aerial currents which are developed from causes existing within the basin. There is not a living stream which enters a valley from the western slope. The fitful currents of Winter storms erode hillsides and gulches, then disappear in debris which once formed the flanks of mountains, are now lost as geological records.

*It is stated that after several years of irrigation the tendency to malarial disease abates. The report, however, is not sufficiently definite to be stated as a fact.

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From the eastern border there are twelve or fourteen rivers which head in the Sierras and debouch in the Sacramento and San Joaquin Rivers. These streams head, one in the mountains of the north, the other in those of the south extremity of the valley, and find a common outlet to the ocean through the Bays of San Francisco, San Pablo and Suisun, about the thirty-eighth parallel. During extraordinary Winter rains, large portions of the valley are subject to overflow; at Sacramento the river rises twenty-three feet above low water mark, and during the prevalence of the dry season, nearly all the mountain tributaries dwarf into such shallow and sluggish streams as to leave barely sufficient water for navigable purposes between the two leading cities of the State. Girded by the Coast Range on the west, and by the Sierras on the east, the little moisture which the valley contains is evaporated about the middle of April, and the temperature increases until the daily breathing heat is measured from 80°, 90°, 100°, and frequently in some localities from 140° Fahrenheit. There is no escape from this oppressive temperature, except along the river courses. Sometimes the air rests for days together in stifling repose; then it moves and sweeps like a sirocco over the country, searing the verdure of every garden-spot and orchard. Again, sand-storms arise, and whirl over untold miles of plains, like an ancient prince of evil, who traveled up and down, to and fro, upon the earth, seeking whom he might devour. Thus the ground becomes perfectly desiccated, except in swamp lands, so that vegetable decomposition is arrested. When water for irrigation is brought in upon this soil, the condition becomes complete whereby active vegetable fermentation and the liberation of miasms are accomplished. It thus becomes a question of interest, whether anything can be done to relieve from malaria an area of land which is capable of sustaining a population of 3,000,000 human beings.

Brief reference will now be made to some of the prominent climatal phenomena which are developed along the ocean line. The westerly Summer winds herald their com-

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ing by banks of fleecy vapor, which enter at the Golden Gate and other low points along the coast, and gradually invest hills and mountains on both sides of the bay to a height of several hundred feet. In places, radiant heat absorbs the vapor during a greater part of the day, but as a general rule the fog begins to appear along the second and third ranges about 3 or 4 P. M., and remains till after sunrise on the succeeding day. Yet there is not uniformity in the appearance of the fog cloud; days may intervene without its presence beyond a few miles of the coast line. It is owing to the vapor thus carried and condensed over cultivated land, that crops along the range of the westerly winds are perfected with much less rainfall than is necessary for them in the interior valleys. A significant fact, to be hereafter applied, may now be noted; the condensation of vapor into fog always first follows the course of those cañons and hillsides which are covered with shrubby vegetation or trees. I have now stated, as briefly as is compatible with a clear unnderstanding, the leading conditions which affect vegetation throughout most of the State, as regards the Coast Range Mountains and valleys. With every possible exposure from the level of tide water to an elevation of over 4,400 feet;* with a temperature among these mountains seldom falling below 32° nor rising above 80°, except where there are no trees; with great variety of soil, consequent on the great variety of minerals which enter into the composition of hills and mountains; with a sub-alpine region without its freezing temperature, where clouds and fogs may shut out the solar light for three-fourths of the entire year, we may reasonably look for a flora which combines all intermediate characteristics between sub-arctic *vegetation* development and the luxuriant growth of the tropics. To some extent, these expectations are realized. There are acclimated on the mountains and in our gardens no less than twelve species of arctic and sub-

*Mt. Hamilton, 4,448 feet, the site of the Lick Observatory, 37°21′; Mt. Diablo, 3,593 feet, 37°53′.

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arctic trees, and more than double the number of Australian and sub-tropical species; among the conifers there are fourteen species; of oaks, there are ten; and sixteen genera of other native trees which go to make up our arboreal vegetation. Some of these are unsurpassed in size and beauty and in rapidity of growth. The pinus insignis will make a growth of eighteen inches in diameter two feet from the ground (and fifty feet high) in ten years, while the eucalyptus in the same time will attain twenty inches in diameter and seventy feet high. Many other of our pines are of equally rapid growth. These measurements only apply to their locality on or near cultivated soil, or in favorable mountain places. In addition to these there have already been naturalized in gardens and suburbs, eucalyptus and acacia and other foreign genera of trees; the luscious fig, the tree ferns of the south; the gorgeous palms, with their nutritive fruit; the nut-bearing trees, sub-tropical habitat; the golden orange and other aurantiaceæ, which form but a few of the contributions which have come within the State, showing how kindly nature will perpetuate among us her feasts of beauty and luxury, if man will but prepare the soil and cultivate the seed which comes almost unasked for within his reach.

With all these inducements to forest culture, the tendency of settlers is toward arboreal destruction. Thirty years ago, between Oakland and San Leandro, there were thirty square miles of noble forest, crowning the tops and the sides of the Coast Range Mountains. There were redwoods over thirty feet in diameter and three hundred feet high; oreodaphreas, six feet in diameter; arbutus, four feet in diameter and one hundred feet spread; oaks, four feet in diameter and fifty feet spread; mansanita, ten inches in diameter; alders, two feet in diameter and sixty feet high; and other smaller trees and numerous shrubs filling in unoccupied localities. Now, nothing is left but a few straggling species, which are fortunately without the range of the vandal's axe.

The foregoing remarks tend to show that the absence of

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arboreal growth on some of the hills and valleys of the State is incidental, not necessary; that the means of reconstructing forests and enlarging their area are easy, and within the capability of every cultivator of the soil; that while there is a steady destruction of timber going on throughout the State, there must necessarily be a gradual increase of area over which malarial fevers will be developed.

What then can be done to diminish the liability to malarial disease in the great central valley of the State, and to limit its range outside of that valley? Apparently there is but one answer to this query: Arrest the useless destruction of existing forests and extend their growth over barren hills and valleys and swamp land. This is the practical idea: the leaves of trees absorb, precipitate and exhale vapor. I will not stop to give details of experiments made by scientific observers in relation to these points; results only will be given. Experiments lead to the conclusion that an oak tree will exhale during twenty-four hours what would be equal to one-quarter inch of water covering an area of ground as large as the spread of the tree. In sixty days of active growth it would render the atmosphere twelve inches of water, which is more than equivalent to the total rainfall of the season throughout the valley, making no allowance for surface evaporation. At the expiration of this time the tree must either die or go into a state of hybernation, unless some new source of supply is found. But the roots of the tree are not confined to the surface soil; they will penetrate it to a marvelous extent in search of water. I have seen branches of roots one-half inch in diameter thirty feet below the surface, and they doubtless went down thirty feet more. There is a vegetable instinct, so to speak, in the growth and movements of roots. They seem to smell out the direction to moisture, just as a mule detects the far off water, and they put for it through hard clay, stony soil, and small crevices in rocks, opening and enlarging their right of way with as much precision and certainty of result as a skillful engineer will reach his objective point on any quartz ledge hundreds of feet within a mountain's bank.

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By thus penetrating the soil far below the line of surface moisture, they take up water and return it to the atmosphere by exhalation, from a depth which is beyond the reach of aerial absorption from the surface; and every day during the dry season the tree will add from one-eighth to one-quarter of available water to the air in the shape of vapor, which could not be received from any other source. Granting, then, the presence of a large forest, an equivalent of more than four or six inches of water per month would thus be brought up from fifty to a hundred feet below the surface of the ground, and distributed as vapor through the medium of foliage over a large surrounding area. Transpiration or exhalation of water takes place principally during the daytime; the rapidity of the process and quantity of water exhaled, depends largely upon the temperature and the dryness of the air. During the night this process may not only be entirely arrested but completely reversed; so that foliage will absorb vapor, and in numerous cases condense it. The more rapidly evaporation is carried on, the greater will be the reduction of temperature; while there is much humidity in the soil, the temperature of valleys remains comparatively low; but as soon as they are desiccated by Summer heat the thermometer will rise to its maximum; at the same time, within the shadow of trees, it will stand from 15° to 20° lower, on account of the atmosphere absorbing the water which is conveyed to the leaves through the roots. Thus it is that the roots of trees, in penetrating deeply into the earth, hold the same relation to the supply of ærial moisture and to the nutrition of trunks and leaves, as an ordinary well holds to the demand of water supply for domestic purposes; and we might as well argue that the constant abstraction of water by a pump desiccates the surface soil, as to claim that trees dry up the water of streams, and limit the growth of annual plants by abstracting the water from the earth which falls in the form of rain.

From these data it is manifest, that if a line of forest trees from three to five miles wide were planted along the

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great valley, that the general temperature of the air would be reduced, and oppressive heat and the consequent incubation of malarial disease materially decreased.

There is another factor of great importance to be noted in this connection: the condensation of vapor from the foliage of trees. For about eight months of the year, commencing in the early part of May, fog-banks cover the hills and mountains almost daily. In valleys where radiant heat absorbs the vapor, the fog does not appear till after sundown. The height of these banks is variable, sometimes it does not exceed one or two hundred feet, but generally they cover the tops of the mountains, which are from eight hundred to two thousand feet high. This fog, on coming into contact with foliage, is partially condensed, and water so produced falls to the ground. The rapidity with which this process goes on is surprising; it varies in different trees. There will always be a wet spot under the spread of an eucalyptus after a damp or foggy night. This comes from precipitation. I have been under a redwood tree at noonday, where the outside temperature was about 80°, and the moss and grass upon the ground were loaded to their full capacity with drops of condensed vapor. When enveloped with the fog the leaves of this tree will condense vapor so rapidly that constant dropping of water beneath is equivalent to a light shower.

Recently on a botanical excursion with Dr. Kellogg, on Mt. Diablo, we were enveloped in a fog-cloud about 7 P. M., which continued for twelve hours. About 6 A. M. we were sideling up a hill, and I observed the ground beneath a mansanito bush to be quite wet; and in picking down there were two inches of soil so saturated as to represent one-third of an inch of water. Further on we tested the soil beneath a large oak, and moisture there represented a full inch of water. Our observations were sufficiently numerous to demonstrate that these were not exceptional phenomena. No spring nor running water was near nor above us; and the hillsides beyond the shadow of the foliage were dry and apparently desiccated.

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Here, then, we see the power of forests as condensing agents. A third or a half inch of water supplied in condensation to the soil every day during the Summer season, would not only give sustenance to surrounding vegetation, but keep the whole atmosphere moist and cool. Now, it is easy to calculate the immense result which miles of forests will accomplish in this respect. In fact, the whole of our hillside vegetation, with the exception of large trees, is dependent for mature existence on this condensing property of their leaves; without it, they would germinate, evolve their foliage, then starve for want of moisture. An illustration of this is to be seen at the summit of the mountains back of Alameda. The *castanopsis chrysophylla* in times past had an extensive range over the hills. The trees were destroyed, and stumps from one to two feet in diameter, rotted to their periphery, are the records of former growth. At this time the numerous saplings which have sprung from the stumps have not been able to attain a growth of more than six or eight feet high, while the same tree, along the coast, attains a magnitude of four feet diameter and one hundred and fifty feet high. The soil over these hills is thin and rocky; and were it not for the fog which is both absorbed and condensed by foliage, vegetation could not hold its life. So with the *pinus tuberculata*; it ekes out a moderate existence, growing on the tops of hills as arid as the soil of any part of the valley, depending mainly on the fog for its persistent tenure of a mountain peak.

These remarks cannot be completed without alluding to the destruction of soil and the consequent increased aridity of land due to the absence of forests. Go where you may, over denuded mountains and foothills from Shasta to Tejon, and you will see the results of the actions of Winter rains, in cutting deep gulches and removing large quantities of good soil. It is a destructive operation, and if the number of cubic yards of fertile land which are thus annually carried off to the sea were correctly estimated, it would almost exceed reasonable belief.

In running up the effects of forests or the absence of

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forests on vegetation and topography, as affecting the quantity of water in rivers and springs, the following conclusions are deduced:

That the amount of water absorbed by the roots of trees is far in excess of the annual rainfall over the surface covered by trees. That trees by absorbing water from great distances below the surface of the ground and exhaling it in the atmosphere, so far from drying up the subsoil, arrest the process of evaporation therefrom by furnishing a large amount of moisture which otherwise it would not receive. That naked hills, exposed as they are to pelting rains, become apparently impervious to water, so that every rainfall washes and erodes the surface, and carries off much soluble organic matter. That forests prevent this waste of water and its erosive action, and by the annual shedding of leaves afford the large mass of material for conversion into vegetable mold, while a constant moisture beneath is favorable to the oxidation of mineral substances, thus leading to the formation of soil. That only about one half the rainfall of every year is absorbed by the unprotected ground; the balance passing off along watercourses into rivers and bays. That the combined action of exhalation from trees and the condensation of fogs by vegetable tissues, while reducing the average temperature of the air, adds materially to the supply of moisture which is necessary to maintain the growth of plants. That with the foregoing results, a supply of water from springs and the volume of water in creeks and rivers would be more copious and constant. That reduction of temperature by increase of moisture along our great valleys and elsewhere, would necessarily lessen the activity of vegetable decomposition, and destroy or abate the extensive incubation of malarial disease.

Should the last induction be considered too hypothetical, I herewith subjoin an extract from a paper recently read before the California Academy of Natural Sciences, by B. B. Redding, who, as a scientist, brings careful observations and correct reasoning to act on existing phenomena:

"Delano is a station of the Southern Pacific Railroad on

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the treeless plains of Tulare Valley, the nearest station to Tulare Lake, and under the direct influence of the prevailing winds that blow, during the Summer and Autumn, from over the extensive marshes made by Buena Vista and Kern River Sloughs before their waters are drained into the lake. During the construction of the railroad, and for some years afterward, relative to the number employed, more men afflicted with malarial diseases were sent to the Railroad Hospital at Sacramento from this station than from any other point on the road. In the Spring of 1876, the Directors ordered one thousand of the eucalyptus globulus to be planted in a triple row near the railroad track between the station and the marshes. These have grown rapidly, and now average more than twenty-five feet in height. The yearly average of patients sent to the hospital with malarious diseases from this station, from 1873 to 1877, was about twenty-five. In 1878 it was reduced to eight. Mr. R. Forbes, who has charge of the records of the Railroad Hospital, in writing me as to the sanitary condition of different stations on the road, says: 'The health of the men all along the line appears to be much improved during the last two years, which is probably due somewhat to the culture of blue gum trees.'

"For the purpose of obtaining statistics of the health of the inhabitants of the village, who were not employés of the railroad, the Engineer Department wrote to Mr. Defos du Bau, an extensive wool-grower at Delano, who employs many men. In his replies he says: 'The population of Delano is nearly fifty persons, but it increases to more than double in March and April, August and September. At these two periods we employ fifty men in our corrals. Intermittent fevers commence in Autumn, and continue a part of the Winter. In 1874 and 1875, with two exceptions, every one had fever. In 1876 it was the same thing. Out of forty-five men employed at the corral, fifteen shearers were taken sick, forty-eight hours after we had a sand storm caused by a southern wind, and the others were attacked the following day. In 1877 there were but three or four

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cases amongst our people, and seven or eight amongst the floating population. In the year 1878 there has been no sickness from intermittent fever. We attribute this change to the trees you have planted, and to those which we ourselves have also planted.' "

As the principles involved in producing a result of this kind are general, it is not to be inferred that the eucalyptus is the only tree applicable for the purpose. The rapid absorption of water, and the conversion by chemical reactions in the sap of malarial poison into inert substances, or its elimination through the leaves, and the condensation of fog vapor, and the cooling of the air to an extent which will arrest vegetable decomposition, are the main conditions under which the incubation of poison will be arrested. And, theoretically speaking, it appears that any tree which fulfills these conditions will produce similar results. Eminent among these, as already stated, are the oak and the redwood, and other pines. The question may be definitely settled by experiment.

In conclusion, one more question remains to be eliminated. How is this project of planting forests throughout the State to be accomplished? As a matter of pecuniary interest to owners of the soil, but little stimulus should be necessary to prompt them to the work. As a matter of hygiene, the State should exert authority, and require landholders to plant and cultivate a stated number of forest trees every year on their premises. So far as Government land is concerned, provision should be made requiring every settler to have planted around his premises, and to keep in a state of good cultivation, a given number of trees, before a patent shall be issued for the land. And a commission should be appointed by the Government with power to protect existing forests from unnecessary destruction, and to enforce provisions which may be made for the cultivation of new ones.

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REPORT OF COMMITTEE ON MENTAL DISEASES.

BY A. B. STOUT, M. D., CHAIRMAN.

TO THE MEDICAL SOCIETY OF THE STATE OF CALIFORNIA: Ladies and Gentlemen: The study of "Mental Diseases" embraces a larger field than at first glance would appear. The time is not far remote when the insane were viewed as denounced by the Creator for their sins of religion and thus castigated by a divine punishment. Being then so scourged by the Almighty will, they were religiously and socially deserted by man. Under these ideas the condition of the insane was truly appalling. They were controlled by force; whipped and chained for disobedience, and deprived of human sympathy. Hence the ratio of mortality among the insane, augmented by aggravating instead of relieved by ameliorating conditions, was exceedingly high.

In the present era in which mental diseases are viewed strictly as diseases of the brain, a new light is shed more intellectually brilliant than the new found electric luminary. To the present mind how intense was the darkness, which this transcendant light-beam has dispelled. The old dominant theological and metaphysical ideas that the mind moved in an independent sphere, with the body for its casket or recipient, have yielded to the force of scientific positivism, whose light will henceforth forever glow with hourly increasing splendor. Let the mind cast back one shuddering glance at the cruelties and horrors perpetrated in in that theocratic age, which but for the victory of science and extension of learning, would still be preëminent, and then seek to forget forever the dark and griefful picture. In mercy we may say: "Forgive them, Lord, they knew

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not what they did." The mind is the pilot of the human organism. That organic construction, the highest illustration of all nature's physical and transcendent organic principles, is controlled and guided by a presiding genius—the human will. In the good olden time, a boat propelled by oars, was significant of the gauge of knowledge which then existed; ethnically it proved a consistent perception of the elements of dynamics. Later the pompous triremes of Grecian attack and defense gave to Greece victory and wealth, because her advanced science put her in possession of practical weapons against which her intrusive enemies could not compete. Later still and now the architecture and full equipment of an iron-clad steamship, whether of war or peace and commerce, is a type of the cumulative application of the resources of physical science to promote the arts of enlightened life. But while the mechanism and the power of the great iron-clad has attained this superiority, the noble ship of the mind has received but equivocal accessions of power. The little boat, his force propelled so swiftly through the water, now rests useless on the shore, but no strength has been added to his physical state to move the ponderous steamer.

To man, however, was given a higher source of power. He was endowed with the force of intellect. He was furnished with a brain of extraordinary capacity, and a head with a cerebral area superior to all other created beings. Of this brain the mind is the exponent, and the will is the expression of its dictates. But the pressure for work on that brain and the tension on that mind to meet the requirements of to-day's science, art and trade, is no longer that of the good olden time. The will that could drive the agile little boat is now called upon to handle the complex man-of-war.

Can it be wondered at, in this state of exaggerated demand for knowledge, that the brain should so often yield to the pressure, and the mind, driven beyond its reason, should engender unnatural wills and finally explode in wild insanity? It is under this pressure of high wrought educated

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mind that all civilized nations are now compelled to exist. Every individual of every such nation is required to respond to the emergency. He must be educated or he must sink. Before this pressure of the age the old time honored nations of Asia are now making their death struggle for existence. What valiant Schamyl can withstand the modern rifle and heavy cannon? Aided by this power all the long hidden lands and peoples of Africa must unbolt their treasures. Before its inspiring influence the ice-guarded regions of the Polar Zone must be o'erclimbed—driven forward as before a storm; the ambition of honor and the lust for wealth of these progressive nations, armed with the appliances of modern science, will burst through mountains or override them; will force oceans to unite, bridge over chasms, and attain all those lofty aspirations which in the good olden time were never dreamed of. Are we then to wonder that the ratios of insanity, under these high pressure efforts, are in excess in the ratios of disease and population? It must follow that the ratios of insanity in the vital statistics of disease are on the increase, and that insane asylums are demanded in greater number; for while we might suppose from the great revolution just alluded to in the philosophy of insanity and the advanced state of psychical pathology and positive therapeutics, that the ratios of insanity must necessarily decrease; yet the fact is that insanity augments greatly its proportion in the averages of disease and mortality.

For the reason stated, our asylums are overcrowded. Napa will not long relieve Stockton, and another relieving institution will be required.

In this new order of things it becomes easier to define insanity. A definition of insanity has been a puzzling issue, especially in the hypercritical contentions of jurisprudence, and regularly, when the expert is called to the witness stand, the poser comes, "Well, doctor, what is insanity?" The varying definitions of authorities fill several pages.

From the fact that no two human minds are identical, it may not be possible to fix one general definitation of insan-

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ity, in abstract words. The fluctuations of mind, then, require that the definition be drawn, especially for litigation, from the specific norm of every special mind. With this proviso, then, we may venture to say that

INSANITY

Is an aberration of the mind by disease or disorder of the brain, from its own individual normal standard.

Insanity is a *symptom.* It is an outward psychical sign of an inward physical disorder. No brain in a perfect normal physiological condition will produce abnormal psychical effects. Every mental alienation is the product of a pathological aberration of nerve tissue. The slightest unhygienic alteration of the nerve-tissue nutrition must necessarily be followed by a corresponding deviation from the norm of the cerebral mechanism. Transient changes in the latter will only cause evanescent fluctuations of the former. The nutrition of the former infallibly modifies the evolution of the latter. As is the body, when only for a day, so is the mind for that day. The quick restoration of the body from its aberration is followed by an equally rapid renewal of the mind from its alienation, by the quick reform of its nerve-cell origin. Hence, we may clearly assume that there is no such thing as absolutely functional disease, purely independent of organic change of tissue. However convenient in practice and in nomenclature it may be to classify diseases as functional or organic, in absolute philosophy the former cannot exist. As in chemistry no new molecular construction can form without a new atomic combination, so can no new correlation of ideas, whether sane or insane, evolve without an altered coördination of nerve emanations, from modified cell nutrition.

Our microscopical researches cannot so magnify these infinitesimal changes in cell construction to make them visible, nor can our psychological perception penetrate and render sensible to the mind the fine vacillations on the con-

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fines of sane mentality and mild insanity. But, so we believe, it is a structural change precedes every mental aberration. In treating, therefore, of mental diseases, I shall feel free to include all maladies of the general nervous system; all functional and organic deviations from health of the brain and spinal cord from its peripheral terminations to its centro-origin.

PSYCHOSIS.—NEUROSIS OF THE MIND, OR MENTAL DISEASE.

Psychosis may proceed from a diffused influence propagated through the entire cerebral system, as in the advancing stages of various fevers, or it may result from the transfused influence of a local disease, as from the irritation of distinct focal abscess, or the inflammation of a special focus or nerve center.

It is an exceedingly appropriate remark of Huguenin, that "after an injury to the head, a psychical vulnerability often remains, which does not lead to a manifest psychosis, unless some exciting cause be added."

In studying the development of the brain and spinal cord, the true key of diagnosis, mental aberrations inclusive, is obtained. This has been a "deadlock" for ages. The next fifty years will file off old rust, and throw new intelligence into Pandora's box.

Our personal resources are limited, for we have no asylum for lunatics at our command. Science demands fact. Fact is the offspring of close-down scientific research in mental disease. This can be found only in public institutions. When will American legislatures make provision and appropriations, as is done in Europe, for scientific study in our State asylums? A small appropriation would enlist a scientific corps, a special pathologist, in both our Stockton and Napa asylums, which would produce an annual illustrated report of observations invaluable to the relief of the future insane. In material comfort, nay, extravagance, the asylums of California are not excelled; but where is the intellectual scientific dividend, accruing from the

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present, for the benefit of the future? Zeal in the profession is abundant; but even economic legislation forgets that learning needs support, and that the dividend of study is the life and the profit of the people.

LOCALIZATION OF CEREBRAL NERVE CENTERS.

This subject in neurology is the interesting topic of the day. It is procuring in the diagnosis of cerebral diseases a refinement hitherto unknown, and still not fully appreciated; for in its wake must necessarily follow an equivalent precision and refinementt in therapeutics. The discrimination in the application of alkaloids now so empirical, will be more sharply defined. A clearer perception will be obtained between motor origins, sensory origins, and vasomotor origins of disease. Many singular acute local neuralgias, especially certain unintelligible local cutaneous affections, will find their explanation in a knowledge of the trophic nerve centers.

DEVELOPMENT OF THE CEREBRO-SPINAL SYSTEM.

The cranio-spinal groove axis, in the embryo, contains originally a thin flat band extending along the entire groove. The margins of this band presently bend backward until they finally meet. These edges then fuse, and thus form the *cerebro-spinal tube*, and appear primarily as a continuous straight cylinder. In the walls of this tube, the nervous structures of the brain and spinal cord are formed, whilst the axis of the tube forms a central canal. The upper or cerebral end of this cerebro-spinal tube becomes the *brain*. At first, the cerebral part of the tube is uniform in appearance with the spinal part, but it soon expands into *three vesicular dilatations*—the *primary cerebral vesicles*. These vesicles, naming from before backward, are called the anterior, middle, and posterior vesicles. They separate from each other by constrictions of the tube. As development progresses these vesicles bend on each other and on the upper end of the spinal cord. As each vesicle is an

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expansion of the cerebro-spinal tube, it is necessarily hollow, and the space in its interior is continuous with the central canal of the spinal cord. In the walls of the vesicles the nervous structures are produced which form the several divisions of the encephalon. The posterior cerebral vesicle bends first forward from the upper end of the spinal cord and then backward; the part which bends forward becomes the *medulla oblongata;* that which bends backward, the cerebellum; whilst the pons is developed at the angle where these two parts are continuous with each other.

The middle cerebral vesicle bends forward from the posterior vesicle. In its roof the optic lobes are formed; in its floor the *crura cerebri*, and the central hollow is the aqueduct of sylvius. The corpora quadrigemina are next developed in this vesicle. The anterior cerebral vesicle now bends downward from the middle vesicle. In the posterior part of this vesicle the optic thalami are formed, one on each side, while the central hollow between constitutes the third ventricle. The antero-lateral parts of the antero-cerebral vesicle are prolonged forward as two hollow processes—the hemisphere vesicles—which become the cerebral hemispheres.

By retaining in mind these great primary compartments in cerebral anatomy [See Art. Anatomy, vol. 1, Ency. Britannica] great aid will be had in the localization of cerebral disease. As evolution progresses, the multiplication of cerebral functions and the increase of local nerve foci become so numerous, that without such a primary guide, localization of mental and organic manifestations becomes exceedingly complicated; as an instance, take the relations of aphonia and the loss of speech, with those of atrophy or paralysis of the nerve centers of language; the former localized in the *medulla*; the latter in the anterior cerebral lobes.

ALCOHOL AS A CAUSE OF MENTAL DISEASE.

The exhaustive work of D. Hack Tuke on this question covers the field. The only trouble is that those "who run"

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do not read. If the humanitarian societies and Boards of Health, paid through State and municipal taxation—the former circulating Bibles and tracts; the latter seeking to diffuse hygienic regulations—would issue a free edition of the work, accessible to all readers, a universal benefit might be achieved. Awaiting such an unexpected event, the agreeable and sanitary *use* and the abuse, so degenerating to a nation, cannot be too much dilated upon.

It is the grand overruling factor in insanity. It is the great Nihilist and Communistic agitator of rational government. The whisky-bottle is the gun used to force the ballot-box, and its aim threatens to be fatal to that order which is Heaven's first law.

The "Commercial Advocate," August 10th, 1878, says: "We are a bibulous people. Statistics furnished by the Commissioner of Internal Revenue, show that during the year 1877, nearly 59,000,000 gallons of spirits, 9,902,353 barrels of ale, beer and porter, and 5,723,000 gallons of imported wines, were manufactured and withdrawn for consumption in the country at large. The number of liquor dealers who paid tax was 166,000, and it is estimated that the amount of money annually expended in the United States by consumers, is nearly $596,000,000. This is at the rate of about fifteen dollars to every man, woman and child in the country."

Seneca declares that "drunkenness is nothing else than voluntary madness," and in this view "the ancient Greeks punished with double rigor any crime committed in liquor; first and principally for getting drunk, and secondly for the crime committed; for certainly, he who eradicates his reason deliberately, as drunkards do, is much more guilty of what is committed for want of that reason, destroyed by his own fault, than he whose reason is overcome by any accidental attack of passion."

This argument combats that of the non-responsibility for acts done in a state of inebriety. Lord Bacon affirms that "All the crimes on earth do not destroy so many of the

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human race, nor alienate so much property, as drunkenness."

Fielding's sarcasms makes it out that "Thirst teaches all animals to drink, but drunkenness belongs only to man." And the common proverb curtly disposes of the question by saying, "He that is drunk is gone from home." One more authority we cite to show the heredity or transmissibility of the influence of alcohol on the brain.

It is remarkable, says Dr. Darwin, "that all the diseases from drinking spirituous or fermented liquors are liable to become hereditary, even to the third generation, and gradually to increase if the cause be continued, till the family becomes extinct." This is not particularly remarkable, for the progeny is the likeness of the parent, not only in external feature but in cerebral conformation and development. Who has not seen the distorted lineaments of the intoxicated father upon the face of the innocent growing son?

We learn from the United States Internal Revenue Office that the duty collected on distilled and fermented liquors was, in 1877, $57,469,429; in 1878, $50,420,815. The monthly income on malt liquor at one dollar per barrel is $30,000 for this district; equal to $360,000 per annum.

From the License Collector's Office it appears that there are in San Francisco 2,300 bars, paying twenty dollars per quarter year—that is $184,000 per annum.

This paper does not permit further estimates. With some labor the amount collected by the United States and every district of each State might be computed. But certainly the consumer pays well for his spiritous whistle. For our own part we must leave the philanthropic moralist and the political economist to determine whether or not it is better for the individual to die that the State may live. The former, at least, may enjoy the consolation that his spirit and his body have gone for his country's good.

When further research shall confirm, it will probably be found that the action of alcohol in excess, and habitually indulged in, on the brain, is to produce a gradual chronic disintegration or granular degeneration of the nerve-

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cells of the gray substance and of the neuroglia of the motor-nerve fibers, acting not only in the brain but also in the ganglia of the spinal cord. As the speech is very early affected in incipient intoxication, as well as loss of coördination in the muscles, and as so many of the cranial nerves emerge from the *medulla oblongata*, we might suppose the primary organ affected to be the *medulla oblongata*. Mental exhilaration precedes these effects, and it may be that the anterior lobes of the brain being first to feel, are the first to degenerate under the repeated introduction of the poison. In either case the radiation of its influence through the entire cerebro-spinal system is very prompt. The early loss of memory and the gradual changes of character would seem to support this view.

However agreeable alcoholic drinks may be to enhance the pleasures of social intercourse by their quickly enlivening spirit, they eventually enervate the mind. However important they may be to rouse the exhausting faculties, or when occasion may require that the brain be excited to its utmost capacity, whether for the emergencies of fatigue, or war in battle, or in the low stages of consuming fever, they finally become the most irremediable debilitants. The best proof is the languor and prostration which follow the drinking bouts. These are always prolonged as the bouts are repeated. The insanity of intemperance is general anæmia. Delirium tremens is a disease of nervous exhaustion and debility, as shown by the increased quantity of nutritious food required after the violence of the attack is past. The loss of procreative disposition and power is another evidence. The derangements of digestion which ensue demand tonics for their restoration. The progressive paresis with final incurable paralysis, and the downward phases of psychosis will together suffice to determine the question, that the stimulant which we have shown so largely used by the people of our nation to inspire their imagination and reinforce their strength, is in fine the deadliest enemy to and unpardoning exhaustive destroyer of their vital energy as men and their dignity as social citizens.

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To the youthful beginner then, we would fain utter the warning, "*Finis aborigine pendet.*"

Our end hangs on our beginning, and a bad beginning weaves hemp for the Sheriff.

INSANITY FROM STOCK AND MINE GAMBLING.

A new and fertile source of insanity in California is rapidly germinating and expanding its roots in our moral and intellectual soil.

SUICIDE has come to be considered as one of our Californian epidemics. The bull and bear malaria defies the hygienic laws and escapes every hydraulic and moral trap set to intercept its permeability into every domicile. Society owes thanks to the able elucidation of this subject by Alexander Del Mar [See Scientific Press Supplement, February, 1879. Address read before the California Academy of Science], and whose statistics I have hereto annexed. Every one should read what we would gladly adopt as our own. The remarkable table of suicides deserves comment, viz., in eighty-four suicides:

1. Stocks, stated	22
2. Insanity (cause not stated) probably	2
3. Intemperance " " "	4
4. Unknown " " probably of 27	12
	40

Being out of eighty-four probably forty.

* * * * * * * * *

SUICIDE AS INSANITY.

Reported number of suicides in San Francisco:

YEAR.†	SUICIDES.	YEAR.†	SUICIDES.
1860	31	1870	47
1861	30	1871	51
1862	13	1872	37
1863	18	1873	38
1864	20	1874	61
1865	17	1875	64
1866	24	1876	70
1867	29	1877	76
1868	28	1878	103
1869	39		

†Ended June 30th.

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During the calendar year ended December 31st, 1877, the following suicides, with their supposed causes, were reported in the San Francisco Chronicle:

ASSIGNED OR SUPPOSED CAUSES OF SUICIDE.	MALES.	FEMALES.	TOTAL.
Losses in mining stocks, etc	20	2	22
Insanity (cause not stated)	5	0	5
Intemperance (cause not stated)	12	0	12
Incurable disease	7	0	7
Love	4	3	7
Ill treatment	0	2	2
Religion	1	0	1
Remorse for murder	1	0	1
Unknown (or not stated)	24	3	27
	74	10	84

LOVE AND RELIGION

(Viz: Love 9, and religion 1), appear to have kept up their normal ratio as opposed to whisky and stock in California; religion emerging from the maelstrom of insanity as almost perfectly sane, having only one aberration to cite.

KLEPTOMANIA.

This form of insanity is on the increase, or at least is more frequently introduced as an extenuation for crime. The bitterest sarcasm and omnipresent on human honesty, is a bunch of keys. Locksmiths make fortunes out of man's dishonor. The practical method of restraint is about as ineffectual as the moral mode of the church. The thief breaks the lock with the same indifference with which he breaks the divine commandment. Hence, the parent who is incessantly plotting burglary, is as apt to transmit a kleptomaniacal diathesis to his offspring's brain, as he is to bestow his external personal likeness—similes similibus. Here is a psychical illustration of what has been before stated. The professional robber implants the vulnerability upon his offspring's brain, and the offspring under a stimulus of a temptation becomes a natural thief. This temptation may become irresistible, and the result-

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ing kleptomania often places many a respected person in the saddest position.

Kleptomania may, however, be generated from a cerebral lesion in the appropriate nerve focus, without being necessarily hereditary. The stealing of comparatively worthless objects by wealthy people amply provided with the luxuries of life, and at irregular intervals—for such kleptomaniacs at other times give, buy and sell with perfect honesty—points to the idea that this disease may be a form of masked epilepsy.

FEVER, A CEREBRAL DISEASE.

Would that we could contemplate and treat all fever as simply an organic disease of the brain! A great simplification would be attained in pathology, and all fevers would be resolved in one general type. The term *fever* meaning only *high heat*, to *be heated*, is inexpressive and vague.

The varieties, as now classified—continued, remittent, intermittent, typhus, and typhoid—are only indifferent expressions, yet unanalyzed, of cerebral conditions. Exaggerations of normal ebbs and flows of vital force, emanating from the brain. Humoral pathologists may contend that fever is the product of a disordered state of quantity or quality, and certainly the condition of the blood is an important factor in fever. But it is only the motor of a cause, the chief center, seat and laboratory of which is in the brain, and probably the gray nerve centers of the hemispheres. Whatever point may be determined to be the central focus aborigine, the morbific action is quickly radiated through the entire nervous system, and hence evolve the various febrile symptoms, the aggregate of which we are, at present, contented to call *fever*. All these symptoms, however, whether those primarily in the brain, or consecutively in the peripheral organs; whether communicated through the motor nerves or the sensory; whether transmitted by the sympathetic pneumogastric system, the vaso-motor nerves, or the trophic ramifications, are but

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emanations from the great encephalic center. The voice of brain suffering is uttered at the distal termini of its nerve cords. The nerve centers or generating ganglia are themselves silent and speechless. Their language is their special function, and these functions exaggerated by disease are the symptoms of fever, thus: mania and idiocy are the apposite exaggerations of the intellect. Ringing in the ears, or deafness of the auditory nerves, exalted sensibility to light, or amaurosis of the optic nerve, humors, convulsions, or paralysis of the motor nerves, palpitations of the heart, difficult breathings, coughs, without local disease, vomitings, diarrhœa, renal symptoms, and the various manifestations through the skin, all are but the telegraphed sufferings of the brain. It is that language which we now name *fever*. On this assumption we may consider fever in its incipiency a superheated condition, or hypercalorification of the brain and nervous system. Attaching thereto its morbific origin, we get hyperæmia as the pathology of mild evanescent fever, while fever in its most aggravated forms would constitute *encephalitis*. A distinguished pathologist in nervous diseases (Huguenin, Ziemsen's Cyclopedia, Vol. XII, page 689) has declared that the first case of idiopathic encephalitis is not yet recorded. That such a disease has not yet been histologically demonstrated may be very true. There is very much in cerebral pathology that has not yet been pictured on the microscopic chart. But let us not despair. The term idiopathic is itself vast and vague. If it implies diseases arising within an organ without any known external cause, we may ask if an external cause, direct or indirect, is not the *fons et origo* of every inflammation in every organ? Or if there can be an idiopathic fever, or an idiopathic inflammation in other organs, why may it not occur in the encephalon? The absence of the signs in the center of that organ proves nothing, because its most apparent signs are expressed at the peripheral ends of the nerves. Though the scalpel and the microscope with its frozen and colored

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sections of brain tissue, may fail to demonstrate morbid tissue alterations, yet the philosophy which teaches that for every abnormal symptomatic eccentricity there must be a positive molecular organic tissue aberration, should also satisfy the mind that encephalitis may exist, and that future research will make it indisputably manifest.

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REPORT ON MEDICAL EDUCATION.

BY C. N. ELLINWOOD, M. D., CHAIRMAN.

MR. PRESIDENT AND FELLOW MEMBERS OF THE CALIFORNIA STATE MEDICAL SOCIETY: The present condition and prospective advancement of medical education in our own State, in the United States, and in all enlightened countries, is highly gratifying to those most familiar with the modern methods now generally adopted by medical schools, and with the acquirements of medical scholars. Now, much more than formerly, are the principles taught in didactic lectures enforced by recitations and clinical studies, in such manner as to discipline the student's mind, store the memory with useful facts, and by the exercise of the reasoning faculties, mature the judgment. To this is added the practical training of the student's sight, hearing, and touch, in the use of the many recently invented aids in diagnosis and treatment.

The modern methods of teaching the several branches of the science and art of medicine, enable the young graduate to meet emergencies in practice, and to successfully compete there with his seniors; and as a further evidence of the efficiency and advantages of modern medical schools, I make mention of the fact, which will be evident to most of you here present, that as a rule, professional success has been attained much earlier in the life of the practitioner during the present decade, than was possible to those who studied medicine under the older methods of teaching.

With the increase of human knowledge, the growth of nations, and the concentration of people in large cities, the extension of commerce, and the rapid commingling of the

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different races and conditions of men, bringing contagion from pestiferous places, and germinating it among populous communities, are causes which have notably widened the domain of medicine, and created a popular demand for a greater number of scientific physicians.

The intelligent merchant, whose capital is in goods and ships on the sea, has learned that the success of his venture depends greatly upon the health and physical efficiency of his crew. The commanders of armies and navies now realize how much the success of campaigns depends upon the ability and organization of their medical corps. The intelligent citizen has learned that his domestic felicity and his pursuit of happiness depend upon the salubrity of his surroundings; and the statesman has learned that the welfare of his country, its highest development and the best enlightenment of its people, depend vastly upon sanitary laws which give the best protection against epidemics and endemics.

With the increase and diffusion of intelligence and refinement among the people, there is necessarily a greater concern for human health and life, which has notably widened and heightened the *sphere* of the physician. His knowledge and counsel are in these days more frequently sought, and new avenues of usefulness are being constantly opened to him.

Medical education has not failed to appreciate this enlarged domain of the physician, and to anticipate the many and varied demands made upon his knowledge; and the medical college which fails to prepare its students for the exalted, responsible and honorable title of doctor of medicine, by a thorough training in the higher as well as the elementary branches of medicine, fails to meet the wants of the age and country, and fails in commanding the confidence and patronage of students and the profession.

It is my privilege to report that the generally enterprising medical colleges in America have enlarged their courses of study and extended the period of college tuition. The two regular medical schools of California have taken ad-

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vance ground in this, now requiring three years of study in the college and also a liberal education of the matriculate before entering upon the study of medicine. These requirements are now well established in several of the prominent colleges in the East, and others not having adopted the three years plan, have very considerably prolonged their regular terms of teaching, and by extra or Summer sessions, they crowd much more study into the two years than formerly.

It has been too much in vogue to charge our home colleges with being young, cheap, easy to graduate from and dangerous to the community. I take this public opportunity to protest against such injustice. Invidious remarks and complaints will not be made against our colleges by any fair minded intelligent man who is familiar with the curriculum now generally adopted, and the high standard of attainments required of the graduate.

There exists a healthful rivalry between medical schools, which stimulates a laudable emulation in teaching and in affording the student the best facilities attainable for acquiring a theoretical and practical medical education. There exists also a natural competition between practitioners of medicine, which fosters continued study and observation—essential factors in conquering success. Such competition, guided by the good fellowship and personal regard for those of allied interests, with minds chastened by long study of nature's laws, and the practice of our art in assuaging human suffering, and in the observance of the established professional ethics, wisely made for the good of all, should quicken our progress, elevate our calling, and increase the usefulness and influence of medical education throughout the land.

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ON THE RELATIONS EXISTING BETWEEN DISEASES OF THE EYE AND GENERAL AND SPECIAL DISEASES.

BY A. BARKAN, M. D., CHAIRMAN.

The Transactions of the Medical Society of the State of California during the years 1877 and 1878 contain the first report on ophthalmology ever presented to the members of this Society. In that report it was thought proper to bring to the notice of the Society "some of the more recent improvements made in that branch of surgery."

The Committee was wise in thus introducing ophthalmology to the forum of this Society, under the banner of surgery, for by so doing attention was more likely to be directed to its importance, a greater interest be excited, and a more friendly welcome be secured for the novice. Still, though a novice, surgery need not be ashamed of such companionship, for even a mere cursory glance at the steady improvement in the old and well tried operative methods, and at the many ingenious operations effected by the new methods, will convince all interested observers that thinking brains and skillful hands are constantly at work to promote the progress of ophthalmic surgery.

The surgeons of our Society having last year extended the hand of good fellowship to their brethren of the ophthalmic lance, making them heartily welcome, and with their friendly breath giving warmth to the surgical half of our ophthalmic body, it is only natural that this year the medical half should desire to undergo the same invigorating process; heretofore keeping one eye on their surgical friends, the other, after the fashion of a slight divergent strabismus, is turned towards the medical part of

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this honored assembly, asking for admittance into the halls of general medicine, feeling safe in making this request, inasmuch as it is based on the certitude that though brilliant therapeutic results in ophthalmic practice are achieved surgically, ophthalmology stands nevertheless in even closer connection with general medicine, and modern ophthalmologists earnestly desire and endeavor to strengthen the ties existing between them so as to facilitate the diagnosis of serious and obscure forms of diseases of various organs of the body by examinations of the eye. The darkness which reigned for centuries in the rear part of the living eye, preventing direct examination of that part, has vanished. No longer does the term "amaurosis," as in olden times, cover a multitude of diagnostical sins—the ophthalmoscope enables us now to examine the remotest corners of the inner eye; and we have learned to recognize and distinguish the varied, important and interesting diseases which affect that organ. Great progress has likewise been made in tracing the many links which connect general diseases of the body with diseases of the eye.

Although numerous contributions to medical literature on this subject have appeared at different times, it is only very recently that Professor Foerster, of Breslau, as eminent as a clinical professor as he is as an oculist, has described exhaustively, for the first time, the manifold relationships existing between general diseases and affections of the eye in their whole extent. This work, written in German, occupies nearly a whole volume of a recently published encyclopedia of ophthalmology, an elaborate and expensive work, designed more particularly for the use of oculists. Appreciating, however, the value that the work must also possess for the medical practitioner, I determined to make and translate excerpts from it and to offer them as my contribution to this year's transactions of the State Medical Society, instead of the usual report on ophthalmology.

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During the progress of my work I have been made fully aware that translating a scientific work from German, which is my native tongue, into English, is a very difficult task, and it is probable that the translation savors strongly of the original language. I therefore, gentlemen, beg your indulgence for all errors, and trust that the object which I had in view, that of drawing attention to the many connections existing between general medicine and ophthalmology, will, notwithstanding many faults, be attained. With this hope I submit this treatise to the kind consideration of the members of the State Medical Society:

SECTION I.—ON THE RELATIONS EXISTING BETWEEN DISEASES OF THE ORGANS OF RESPIRATION AND CIRCULATION, AND DISEASES OF THE EYE.

In consequence of venous stagnations caused by quickly passing impediments in the pulmonary circulation, extravasations often occur under the conjunctiva, and in the loose cellular tissue of the eyelids, in whooping cough, and after violent vomiting. Emphysema, one of the most frequent chronic affections of the lungs, often causes rupture of actual blood vessels, owing to the impediment in the venous circulation. In no part of the body are small blood vessels during life under such direct observation, as in the ocular conjunctiva and the retina. Extravasations of blood in these parts, if of repeated occurrence, indicate diminished power of resistance in the blood vessel, due to fatty degeneration of their walls, and to a simultaneous fatty degeneration of the tissues of the heart. The presence of "arcus senilis"—the result of fatty deposits in the peripheric zone of the cornea—must particularly arouse suspicion of existing heart disease, attended with fatty degeneration of the tissues of the heart, especially if observed in the young. Serious changes in the composition of the blood also indicate general impairment of nutrition of the walls of the blood vessels. Biermer observed retinal apoplexy in thirty-five cases of "anæmia perniciosa progressiva," ac-

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companied with capillary blood extravasations in different organs.

Aneurisms of the carotid, truncus anonymus and aorta, cause, through pressure on the sympathetic nerve, pupillary contraction of the corresponding side. A diminished tension, and a considerable change in the tension of the arterial system, produce pulsation of the retinal arteries in nearly all cases of insufficiency of the aortic valves—an important fact, first discovered by Becker of Heidelberg.

Diseases of the heart, endocarditis, valvular disease, carotid aneurisms and sclerosis of the arteries occasionally cause embolisms of the central retinal artery. They can be easily recognized ophthalmoscopically, by the extreme attenuation of the arteries, and by a whitish opacity of the retina round the optic papilla and yellow spot. An hemorrhagic obstruction in the retina, subsequent to the embolism of a branch of the retinal artery, has likewise been described by Knapp.

The presence of tubercles in the choroid, recognizable with the ophthalmoscope, is a fact of considerable importance to the general practitioner. Cohnheim has demonstrated by numerous post-mortems, that in all cases of acute far-spread miliary tuberculosis, miliary tubercles were found in the choroid, and that those are never found, when only pulmonary or intestinal tuberculosis is present. Thus miliary tubercles are most often seen in the thyroid gland. Seen with the ophthalmoscope, they look like roundish spots of a yellowish red color, about one-third to one-half the size of the papilla optica. A few cases have been observed, where tubercular iritis has co-existed with tubercles in the choroid, in the eyes of persons who had died of miliary tuberculosis.

SECTION II.—ON THE RELATIONS EXISTING BETWEEN DISEASES OF THE ORGANS OF DIGESTION, AND DISEASES OF THE EYE.

It is a generally entertained opinion that dental irritation, and diseased roots of teeth, cause various diseases of the

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eyes; amongst others must be mentioned, simple conjunctivitis; phlyctenular conjunctivitis—said to be due to dental irritation in children; amblyopia and amaurosis. These diseases sometimes disappear after the diseased tooth has been extracted, or they may only be relieved. The pathological process which takes place in the optic nerve and retina during these dental diseases, is not exactly known. In some cases nothing abnormal can be discovered with the ophthalmoscope in the retina; in other cases opacities are observable; and in others atrophy of the optic nerve.

Taking into consideration that diseased dental roots cause violent neuralgic attacks in various branches of the trigemini; that furthermore, severe neuralgia of the trigemini often causes intense lachrymation, conjunctival injection, and even in some rare cases, considerable and long continued swelling of the transition part of the conjunctiva, it is certainly not unjustifiable to suppose that the diseased dental roots may lead to changes in the retina, in the optic nerve, or in the cellular tissue of the orbit. At present, however, there is nothing ascertained on this subject with scientific exactness.

With respect to diseases of the stomach hæmatemisis, which is one of the gravest forms of bleedings of the stomach, often causes considerable impairment of sight, even absolute amaurosis. This disease is evidently occasioned, not so much by the bleeding which takes place in the stomach, but by the bleeding being so considerable that it leads to blood vomiting. Ophthalmoscopically is revealed white atrophy of the optic nerves; retinal blood vessels slightly narrowed, and occasional opacities in the retina. It is probable that the changes in the composition of the blood, owing to sudden and intense loss of blood, causes a serous infiltration of the retina, extravasation of blood through the retinal blood vessels, and atrophy of the optic nerve. It is necessary to state that this change does not take place immediately after the loss of blood, but only some days afterwards. Partial recovery of sight has been observed even after a long duration of the amaurotic con-

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dition. Ophthalmoscopic observations of these cases may possibly throw light upon the nervous symptoms occurring after great loss of blood. A feeling of oppression in the head, headache, and impairment of the power of thinking, are symptoms which may perhaps be caused by changes in the brain similar to those seen in the retina. It has been stated formerly, that helminthiasis causes eye affections, more especially in undue dilatation of the pupil, but no new nor reliable observations on this topic have been published.

It is well known that icterus is easily recognized by the yellowish color of the conjunctiva. In splenic leukæmia, the retina especially, may become the seat of prominent flat tumors, similar to those found in the liver, kidneys, pleura, carotid, etc., and caused by the exit of white and red blood corpuscles through the sometimes fattily degenerated blood vessels. In examining these cases of "retinitis leukæmica," ophthalmoscopically, the background is vividly seen of an orange yellow color, the retinal veins appear unduly distended, rose red in color, and of tortuous course, the retinal arteries narrowed and pale yellow in color; yellowish white spots may be observed in the retina—these latter disappear, but only to return. Retinitis leukæmica is not an invariable symptom of general leukæmia.

SECTION III.—ON THE RELATIONS EXISTING BETWEEN DISEASES OF THE URINARY ORGANS, AND DISEASES OF THE EYE.

Amongst the numerous diseases of the kidneys, it is especially that complex of pathological processes known as "Bright's disease," which influences the eye in various ways.

The chemical and physical data which connect the eye symptoms with affections of the kidneys, are impoverishment of the blood, brought about by continuous loss of albuminous substances, by its becoming impregnated with urea, and by hypertrophy of the left ventricle, which frequently occurs in consequence of disease of the kidneys.

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A diminution in the power of accommodation in the eyes of patients afflicted with albuminuria of long duration, is likewise often observed in many other chronic diseases by which the general health of the patient is impaired. The diagnosis of these cases is easy, and proper convex glasses at once restore the acuity of sight.

The observations just made and published by Moritz Heymann of Dresden, on the value of ophthalmoscopical examinations, added greatly to the reputation of that instrument. He demonstrated that by its use, affections of the kidneys could be frequently recognized, which, till then, had been overlooked. The eye was found to present a typical form of fatty degeneration and sclerosis of the retina. In cases of Bright's disease, white wax-like spots are easily seen in the retina with or without extravasations, and sometimes the optic nerve will present the characteristic appearance of engorged papillæ. These changes in the retina are mostly found in cases of atrophy of the kidneys, likewise undoubtedly in acute nephritis, following scarlatina. In cases also of chronic inflammatory swelling of the kidneys, and sometimes, though rarely, in amyloid degeneration of the kidneys, and in women who suffer from eclampsia whilst in labor, and whose urine for many months after giving birth had contained albumen. In these cases have been exhibited the characteristic symptoms of what is best termed "retenitis albuminurica."

It is not yet known positively how the connection between disease of the kidneys and that of the retina is brought about. Traube's explanation, that retinitis is dependent upon an increased tension of the arteries, is made unacceptable by a few cases where morbus Brightii and retinitis were present, but hypertrophy of the heart was wanting. The changed composition of the blood, as in anæmia perniciosa, hæmatemesis, and leukæmia, must be considered the principal cause of the peculiar pathological changes in the retina, although hypertrophy of the heart has its share in causing the extravasations. It is necessary to state that the walls of the retinal blood vessels

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in these cases are often found to be in a condition of sclerotic infiltration, or of fatty degeneration; on the whole, retinitis albuminurica is not a very frequent complication of diseases of the kidneys, and the cases probably do not amount to more than six or seven. The appearance of retinitis albuminurica generally indicates a bad prognosis with respect to the life of the patient; by far the largest number die before a regressive change takes place in the fatty retinal exudations.

It is necessary to distinguish carefully between the considerable, though always only partial impairment of sight, which is produced by retinitis albuminurica, and the loss of sight produced by uræmic amaurosis; in the latter, complete, or very nearly complete blindness, is quickly developed. In from eight to twenty-four hours, both eyes become affected, and serious cerebral symptoms invariably present themselves; a tormenting headache, vomiting and convulsions, follow or precede the commencing blindness; the pupils are dilated and do not react to light, or they show reaction to light, notwithstanding the absolute want of perception to light. Patients have been repeatedly examined opthalmoscopically during these attacks, but as a general rule, no trace of an abnormity was discernible in the background. The blindness rarely lasts longer than from twelve to twenty-four hours after the attack; vision then quickly returns, and in two or three days, visual power becomes fully restored. Uræmic amaurosis may be present at the same time as retinitis albuminurica, the attacks may temporarily pass away, and return in the course of weeks or months, whilst retinitis albuminurica continues its course undisturbed. Uræmic amaurosis occurs oftener in acute croupy nephritis, especially in scarlatina, than in cases of atrophy of the kidneys; it has likewise been observed in chronic inflammatory swelling, but never in cases of amyloid degeneration of the kidneys.

The sudden blindness observed during pregnancy or at the birth, with or without eclampsia, and with albuminous urine, is also caused by uræmic amaurosis; these later cases

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are much more rare than those of retinitis albuminurica. V. Graefe states, that in thirty-two cases of amblyopia with albuminurica he has found thirty with the characteristic retinal changes; in two of these cases there was no change at all, but strongly developed uræmic symptoms: still the proportion of 1.15 appears too high.

The process in the brain causing this blindness is not yet fully understood; we are, however, justified in supposing that it is the same which produces uræmic convulsions, namely, urea, and its decomposing products, carbonate of ammonia, which, if retained in the blood causes uræmic poisoning of the central nervous system, and together with other uræmic symptoms, brings about amaurosis. Traube, on the other hand, is of opinion, that owing to the influence of the increased tension in the arterial system always existing in these cases, as well as to the watery condition of the blood, copious watery transudations take place into the cavum cranii, which superinduce anæmia of the brain, and that this quickly developing, cerebral anæmia is manifested by convulsions.

SECTION IV.—ON THE RELATIONS EXISTING BETWEEN DISEASES OF THE SEXUAL ORGANS, AND DISEASES OF THE EYE.

Forster first described, under the name of *kopiopia hysterica*, some disturbances in the eye which are caused by anatomical changes; first, in the parametrium, or cellular tissue which surrounds the uterus, and which is abundantly supplied with nerves; and secondly, in the uterus. These diseased conditions must be considered as reflex hyperæsthesia of the nervus quintus and optic nerve. The principal symptoms are: most varied sensations of pain in and around the eyeball, often increased when using the eye, or by a bright light, but felt also when the eye is not used; the pain bears no resemblance to superorbital or ciliary neuralgia. Local examination of the eye usually reveals a normal condition.

Hyperæsthesia, however, not only affects the nervus

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quintus, but also the second sensual nerve of the eye, the optic nerve, and is characterized as a sort of photophobia, or sensitiveness to bright light. The patients have good and bad days, and generally make very exaggerated complaints, which are constantly changing. The symptoms increase in intensity just before or during menstruation. The reaction of the pupils and sharpness of sight are nearly always normal. These symptoms are mostly met with in elderly unmarried women, married but childless, or in such who have become prematurely sterile. The general condition of these patients is usually far from being normal. The whole mass of nervous symptoms known as hysteria are often met with, still they may be, in rare cases, entirely wanting.

This complexity of symptoms, which, so far as it relates to the eye, is very characteristic, always stands in causal connection with a peculiar chronic inflammation of the cellular tissue which surrounds the uterus, was first recognized by Professor Freund of Breslau, and was termed by him atrophic parametritis. Although kopiopia hysterica may be considered as peculiar to the female sex, a small number of similar cases have been observed in the male sex, and it is probable that their pathologico-anatomical basis is a defect in the sexual sphere; but this point has not yet been fully ascertained. Kopiopia hysterica *is not curable.* The disease, however, always finally disappears, although, in some cases, only after years of suffering.

Forster recommends as a remedy for the pain and sensitiveness to light, 2–0 castoreum canadense, and 4–0 extract. valerianæ. This quantity to be taken during the course of four days, generally affords relief for several weeks. Zinci acetas may also be tried. Narcotic remedies, quinine, and cooling eye douches, are without effect. Confinement to a totally dark room is objectionable. The use of smoke glasses may be allowed. The treatment of parametritis chronica, the fundamental disease in these cases, is a very difficult one; with finished involution, and progressing age, the symptoms, as far as they relate to hyperæsthesia of

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the optic nerve and nervus quintus, disappear, as a rule, entirely. The fact that morbus Basedowii stands in close connection with affections of the sexual organs, has been clearly proved by Freund, and also by clinical observations made by others. Freund found chronic parametritis in ten or twelve cases.

The exophthalmos characteristic of morbus Basedowii must also be mentioned. Becker, of Heidelberg, has called attention to the fact, that the caliber of the retinal arteries is greatly enlarged in this affection, and that they show pulsation; these symptoms are attributable to increased action of the heart.

In regard to the connection existing between disturbances of the sexual sphere and neuro-retinitis, atrophy of the optic nerve, and amaurotic conditions, little more is known than the fact that it exists; it appears probable that in consequence of anomalies in menstruation, of premature involution of the uterus, hyperæmia and subsequent inflammation and atrophy of the optic nerve, are sometimes developed; and it is well known, that out of a majority of women affected by atrophy of the optic nerve, a proportionately large number are those who have been sterile, or have become so prematurely.

Mention has been made of retinitis albuminurica and uræmic amaurosis occurring during pregnancy. There is but one case on record without ophthalmoscopical examination of a woman, who three times consecutively during lactation, became afflicted with amblyopia, and which ended in recovery. Hutchinson has observed weakness of accommodation during the period of lactation. Still more frequently has it been noticed, that weakly women who nurse their children unduly long, often suffer from catarrhalic and phlyctenular inflammation of the conjunctiva, from superficial keratitis and lacu-iritis.

Masturbation is said to cause amblyopia in very rare instances; it likewise renders the treatment of simple conjunctival troubles, which generally heal readily in the young, exceedingly difficult and protracted.

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SECTION V.—ON THE RELATIONS EXISTING BETWEEN DISEASES OF THE NERVOUS SYSTEM, AND DISEASES OF THE EYE.

The eyes stand in closer relation to the brain than to any other organ of the body, for the retina and optic nerve must, in reality, be considered parts of the brain; furthermore, five pairs of cerebral nerves—the oculo-motor, trochlear abducent, trigeminal and facial—pass through a short intermediate space to the eyeball, and its auxiliary and protective apparatus. Finally, there exists the closest connection, not only between the arteries and veins of the eye and the blood vessels within the skull, but also in the space between the dura mater and pia mater on the one side, and the lymph spaces of the eyeball on the other.

These multiple connections point in many cerebral diseases to the eye, as the seat of important symptoms which may throw more or less light upon the cerebral affection. There exists an indirect connection between the eye and the spinal marrow through the sympathetic nerve. In irritation of the centrum cilio spinale, seated in the spine near the lowest cervical, and the highest thoracic vertebra, causes enlargement of the pupil.

The supposition that cerebral hyperæmia would be recognized with the ophthalmoscope, with some degree of certainty, has not been verified, although injection of the conjunctiva and contracted pupils have been observed in children suffering from convulsions, caused by passing cerebral hyperæmia. Attention has been called by Niemeyer, to the fact that, in truly dangerous forms of cerebral hyperæmia, brought on by excessive brain work, after long continued wakefulness, the contents of blood found in the external parts, do not correspond to the hyperæmic condition of the brain. No marked changes in the retina or optic nerve have been observed in cerebral apoplexy; but, in elderly persons, the frequent occurrence of slight blood extravasations in the conjunctiva and retina, are indicative of a strong tendency to cerebral apoplexy.

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It is probable that it will be possible to diagnosticate by a thorough ophthalmoscopical examination, miliary aneurisms in the brain, as a simultaneous occurrence of such miliary aneurisms in the retina has been ascertained by post-mortem examinations.

The diseases occurring in the eyeball in simple meningitis and epidemic cerebro-spinal meningitis, are probably caused by direct continuation of the affection seated in the intracranial space. Schwalbe's researches, which have made known the communication between the lymph spaces of the eye, make a direct continuation of the disease easy to understand, and obviates the necessity of supposing metastastic processes.

Meningitis may, in rare instances, affect directly the retina and optic nerve, and be revealed ophthalmoscopically by symptoms of neuritis and retinitis. The cerebral disease may continue through the foramen opticus, between the outer and inner sheaths of the optic nerve, and thus meningitis will give rise to choroiditis, iridochoriditis, retinitis and hyalitis. Besides the optic nerve, the other cerebral nerves supplying the eye are affected simultaneously. The contraction of the pupils at the outset of the disease, must be looked upon as a sympton of irritation of the oculo motor nerves. In the later stages, paralysis of the muscles supplied by the oculo motor and abducent nerves occurs, thereby giving rise to ptosis, deviation of the visual axis, and pupillary paralysis. The complication of meningitis with inflammatory affections of the inner tunics of the eye, is not at all frequent, and is mostly observed in children before their fifth year.

Whilst these complications are based upon a continuation of the inflammatory process, through Schwalbe's lymph spaces, cases of purulent meningitis are on record, where the inflammation takes a different course, and spreading through the fissura orbitalis, caused chemotic swelling of the conjunctiva bulbi, without any inflammatory symptoms in that membrane; or caused considerable sero-purulent infiltration of orbital cellular tissue and exophthalmos—

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symptoms which prove of great value in making the sometimes very difficult diagnosis of acute purulent meningitis.

Other symptoms of brain trouble can be observed in the eye, but as they are not of a specific character, it is impossible to judge, except in a very limited manner what specific cerebral affection exists, and even then, only by taking into consideration all other cerebral symptoms. On the other hand, certain general conditions which are common to different cerebral affections, manifest themselves by changes in the eye.

In this connection, mention must be made first of the increased intracranial pressure which characterizes itself in the eye, by the appearance of neuritis, neuro-retinitis, and by developed cases of "engorged papillæ." Since Schneller and von Graefe first, in the year 1860, directed attention to the complication of intracranial diseases, with inflammation of the optic nerve, the numerous works which have accumulated on this topic, show that cerebral tumors of most different texture—hydrops of the ventricles, echinococcus, abscesses, hemorrhage, softening of the brain, meningitis, cerebro-spinalis, tuberculose meningitis, diffuse encephalitis—may all lead to more or less serious changes in the papilla optica, retina, and blood vessels. Although these changes, taken alone, do not allow of a definite judgment with respect to the seat of the disease or the nature of the diseased process; yet, they may become of great significance in conjunction with other general and cerebral symptoms, and the course of the disease. The absence, however, of these changes, proves nothing against the existence of one or the other of these cerebral affections.

Neuro-retinitis, caused by cerebral affection, exhibits nothing peculiar. Redness of the papilla optica, and retinal opacity in its neighborhood, blurred outline of the optic disc, hyperæmia, and tortuous veins, prominence of the papilla, hemorrages in the retina, are the main features presented to us ophthalmoscopically. The principal type of these changes is represented by the "engorged papilla," so termed by von Graefe, who has rightly supposed that it was

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caused by a prevented flowing off of the venous blood from the retina. His opinion, however, that a compression of the sinus cavernosus, was the means of preventing the flowing off of the blood from the vena ophthalmica into the sinus, has given place to a more correct explanation of the manner in which the stagnation of blood is accomplished. Schwalbe has recently shown, that the space between the outer and inner sheath enveloping the optic nerve, the subvaginal space, can be injected from the subdural space, and that the injected fluid penetrates close to the optic nerve head and beyond. The subvaginal space being gorged with blood (hydrops vaginæ optici), the optic nerve, and its blood vessels—especially its veins—are compressed, stagnation of blood in the retinal veins takes place, and a swelling of the papilla optica and the retinal parts next to it is caused—the result of which is engorged papilla. Experiments made by Manz, who injected defibrinated blood into the subdural space (between the dura mater and arachnoid of rabbits), pointed out the fact of the presence of engorged papillæ; they mostly occur simultaneously in both eyes, and indicate that an increased pressure takes place in the subdural space, which causes the arachnoidial liquid to enter the subvaginal sphere. Although the visual power may, in exceptional cases, remain remarkably good for some time, notwithstanding are revealed by the ophthalmoscope fully engorged papillæ, sight, as a general rule, becomes greatly impaired, and various defects in the visual field are always to be found. Post mortem examinations have proved that the swelling of the papilla optica is caused principally during the first stage, by thickening of the nerve fibers, and later by newly formed connective tissue, and œdematous infiltration.

The engorged papillæ are rarely developed rapidly—the process may continue for months; there may be no apparent change, but finally the result shows itself by white atrophy of the optic nerves and definite impairment of sight. Recovery is rare. The engorged papillæ is caused more particularly by such cerebral affections that have for a

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long continuous period increased intracranial pressure, and therefore must be considered as a most valuable objective symptom indicative of the condition existing within the brain. Engorged papillæ is a very frequent and prominent symptom in cases of cerebral tumors, including large isolated cerebral tubercles. In twenty-three cases of engorged papillæ, Jackson found seventeen of tumors, three of abcesses, two of extravasations of blood, and one of softening of the brain. A few cases of engorged papillæ in hydrops ventriculorum, cerebro-spinal meningitis, and tuberculous meningitis, are also on record. It is an important fact that the best developed forms of engorged papillæ are principally met with in cases of cerebral tumors, whilst the less marked forms are found in other intracranial diseases, and bear more resemblance to ordinary neuritis. It is not possible to judge from the presence of the engorged papillæ the exact locality of the cerebral tumor as they may be found in various localities. Whilst then the most fully developed forms of engorged papilla must not be considered as arising from the continuation of the inflammatory process, yet some cases of neuritis, characterised by only slight swelling, may be due to a direct continuation of the inflammatory process from the brain and its enveloping membranes to the optic nerve. For the sake of a correct critical appreciation of the engorged papillæ, it is necessary finally to state that it is also found, but then only unilateral in some extracranial, intraorbital diseases, where there is no increased pressure in the cavum cranii as in orbital periostitis and in tumors in the orbital cavity. Although the engorged papillæ is one of the most frequent symptoms in cases of cerebral tumors, yet many cases of similar new formations occur in which the ophthalmoscope shows a normal condition of the background of the eye. In other cases again, may be found white atrophy of the papillæ optica, and at the same time may appear symptoms of increased intracranial pressure. Atrophy of the optic nerve may likewise be caused by syphilitic tumors. Occasionally,

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though rarely, the ophthalmoscope will show the presence of albuminuric retinitis in cases of cerebral tumors.

Statistical data, compiled by Heinzel from sixty-three cases of children affected with meningitis tuberculosa basilaris, intracranial tumors, meningitis cerebro-spinalis, œdema meningum, sclerosis-cerebri, etc., indicate the relative frequency of changes in the optic nerve recognized with the ophthalmoscope in intracranial diseases generally. Out of sixty-three cases forty-seven were found with changes in the optic nerve and only sixteen without. By post mortems it was ascertained that out of thirty-seven cases of hydrocephalus only eight were found to have a normal background.

Neuro-retinitis developes itself sometimes only when the cerebral disease has progressed considerably. Both eyes are always affected. In thirty-eight cases of tubercular meningitis, Albutt saw twenty in which there were changes in the background of the eye. If ophthalmoscopical examination gives no clue as to the nature of the intracranial disease, an exact topographical examination of the visual field will serve nevertheless as an important guiding point with respect to the location of the cerebral affection. The value of these points however can only be fully realized when pathalogic-anatomic as well as physiological researches will have furnished a firmer and more extensive basis for more exact conclusions. The clinical symptoms found by examination of the visual field with the permieter show that only the two following cases occur:

1. In both visual fields the lateral halves are wanting, and the function extends only over both medial halves. The right eye, therefore, sees only objects situated to the left of the point of fixation; the left eyé sees only objects situated to the right of the point of fixation—medial hemiopia.

2. Either the right halves are found wanting in both visual fields, whilst the two left halves are in function, or vice versa; or the two left halves are deficient, and the two right halves are present—homonyme hemiopia; but

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it never occurs, that whilst one field of vision is entirely normal, that the inner or outer half alone is wanting in the second eye; nor does it occur that the two medial halves are wanting whilst the lateral ones are present.

These clinically ascertained defects in the visual field, are satisfactorily explained by the generally accepted theory of Newton and Muller, of the semi-decussation of the optic nerves in the chiasma opticum. Corresponding to this anatomical condition of the optic fibers, cases of medial hemiopia are slowly developed; without motor-paralytic symptoms, the disease is a slowly progressive one, having its seat in the anterior or posterior angle of the chiasma, often originating in the hypopysis cerebri, affecting first the middle part of the chiasma, then its lateral part, and finally, in all probability, destroying the whole chiasma. Cases of homonyme hemiopia, on the other hand, which occur likewise more frequently than in the first group, arise, in most cases, suddenly, exhibiting not rarely symptoms of cerebral apoplexy, unconsciousness, paresis of the upper extremities of the facial nerve. The disease is stationary, and does not spread to the half of the visual field which has remained healthy at first, and complete blindness does not ensue. The symptoms of homonyme hemiopia lead to the conclusion, that the cerebral disease is seated at some point in the course of the tractus opticus—between the central origin and the chiasma. Certain cases in which occur only partial defects, situated at corresponding points in the homonyme halves of the two fields of vision, must also be counted amongst hemiopic defects, and justify similar conclusions as to the locality of the disease in the brain.

Symptoms relating to the muscular apparatus of the eye, are met with in a great many cerebral diseases; they are mostly paralytic affections; spastic contractions or nystagmus are rare. The value which these symptoms possess, as indicative of the seat of the disease, will be considerably

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increased when the cerebral course of the fibers of the oculo-motor nerves—trochlear, abducent, facial, and their connection with the motor and reflex centers—shall become more accurately known. The nucleus of these nerves is situated on the floor of the fourth ventricle. If motory disturbances appear simultaneously in the neigborhood of these nerves, the probability of disease in that part is great.

According to Adamunck's experiments made on dogs and cats, the corpora quadrigemini are of great significance for the associated movements. In those not rare cases, where the movements of both eyes, either to the right or to the left, are limited, the localization of the pathological process is in all probability in the anterior part of the corpora-quadrigemini. According to Prevost we find:

1. That in cases of apoplexy, both the eyes and the head rotate to one side.

2. If the seat of the affection is in the cerebral hemispheres, then both eyes and the head are directed to the side affected by the cerebral disease—this symptom frequently passes away in a few days.

3. If seated in the isthmus encephali, rotation may also take place towards the opposite side and last for a long time.

In partial cerebral sclerosis the eyes are almost the only organs in the higher sensory class that become affected. Atrophy of the optic nerve has been found in a few cases; but, for a diagnosis of cerebral affections, the condition of the eye muscles, which exhibit any stagmus-like trembling, is much more important—it is a symptom which rarely occurs in other cerebral affections following a similar chronic course. This nystagmus is a similar symptom, as the tremulousness in the extremities, which takes place as soon as they are moved, and is entirely wanting when they are in repose. This tremulous condition of the eyes, which is found in about half of all cases, must be considered as a paretic symptom; the more so, as distinct paralysis is met with in single eye muscles; also, ptosis, divergent position of the

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eyes, mydriasis, even complete immovability of both globes. Post-mortem examinations have revealed degenerations in many distinct parts of the brain, and also sclerotic changes in the optic nerves, and in the nerves supplying the eye muscles. According to Charcot, diplopia—that is, paresis of the eye muscles—is, as it is in tabes, an initial symptom, and it generally disappears entirely. Amblyopia is a more persistent and frequent symptom of cerebro-spinal sclerosis, but only in exceptional cases does it lead to total blindness.

Circumscribed tumors seated at the base of the brain, or the basis cranii, or diffuse new formations, such as aneurisms, gummata, exostoses, tubercles, may occasion paralysis of the eye muscles. The diagnosis as to the seat and nature of the process, is one full of difficulties. As a general rule, it may be concluded that complete paralysis of the nerves is more likely to ensue when the disease is seated at the base of the brain; because then all the fibers which are densely thronged in the trunk of the nerve are affected. If successively a second or third nerve becomes totally paralysed, and simultaneously other symptoms indicating cerebral disease present themselves, the basal seat of the disease is yet more probable. Multiple incomplete paralytic conditions may, on the other hand, indicate disease of the brain itself, as the fibers of the nerves pass on here from one another, and they then may become more easily partially affected.

It is well known, that in about sixty per cent. of all cases of insanity an unequal size of the pupil exists. Bilateral mydriasis and bilateral myosis are of an equal significance as the unequal pupillary size in the insane. Although all these symptoms of paralysis may occur in the very varied forms and stages of insanity, yet the unequal size of the pupils is most frequently met with in paralysis of the insane. Out of one hundred and three cases of paralysis, Nasse found ninety-nine that exhibited changes in the pupils, including two cases in which no difference in size existed, but which showed a remarkable contraction of the pupils that were no larger than the head of a needle. These

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pupillary symptoms have no prognostical significance with respect to the curability of insanity. This has of course no reference to cases of paralysis. All forms of insanity may take their course with or without disturbance in the mobility of the iris, but they are of more frequent occurrence, and show more stability in the chronic forms. In all forms of psychic affections, disturbances in the mobility of the iris may make their appearance. Both eyes are affected with equal frequency. The unequal size of the pupils may or may not disappear with the mental disease. Myosis occurs oftener in the stadium exaltationis; if acute mania is complicated with myosis, general paralysis, sooner or later, may be looked for with tolerable certainty.

The changes perceivable with the ophthalmoscope in the background of the eye, in psychic affections, are either simple white atrophy of the papilla optica, or different forms of neuritis—hyperæmia of the papilla, neuritis simplex, neuritis descendens, more or less engorged papilla, and complete or incomplete secondary atrophy of the papilla optica resulting from neuritis. Setting aside cases of general paralysis, where white atrophy is more particularly observed, no characteristic ophthalmoscopic appearance of any form of psychic disease exists. The ophthalmoscope may show in every form of mental disease a completely normal condition of the background of the eye; or it may be that every one of the retinal changes mentioned will occur. A few modifications of this statement must, however, result from the following data: Albutt has furnished the most ample statistics as to the symptoms to be observed with the ophthalmoscope in the insane. He states that in forty-three cases of epilepsy attended with insanity he found fifteen with marked changes in the optic nerve, such as white atrophy, which in some cases had arisen from neuritis —rarely distinct neuritis—but usually only increased redness of the optic disc with indistinct outlines.

In fifty-one cases of mania, Albutt observed in twenty-five a condition indicating intracranial disease. He found the optic disc anæmic during the attack of mania, probably

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owing to spasm of the blood vessels. In all cases of mania, if the background of the eye was examined a few days after the attack, it was invariably found injected or reddish (consecutive paralytic dilation of the blood vessels). After grave attacks the optic disc appeared entirely hidden by the redness. The permanent changes exhibited were either stasis with consecutive atrophy or softening which passed over into simple atrophy or else showed a mixed character.

In thirty-eight cases of dementia, twenty-three exhibited diseases of the optic nerve (principally atrophy) or of the retina.

In cases of melancholia the retina showed very frequently an anæmic condition.

In twelve cases of idiocy, five were found with the optic nerves in a decidedly atrophied condition. Albutt gives no decided opinion as to whether or not this condition is owing to encephalic inflammation in childhood.

In paralysis of the insane, positive results are more frequently met with from ophthalmoscopical examinations than in any other form of disease. Out of fifty-three cases, forty-one were found with atrophy of the optic nerve in different stages. Albutt considers that although atrophy of the optic nerve is frequently met with in cases of paralysis, yet that it cannot be determined on with certainty at the commencement of the cerebral disease, and consequently that it lacks diagnostic value. The process is not one progressing from the center to the periphery, but one attacking the optic nerve independently of the central organ, and is often brought about by hyperæmia of the optic disc and slight exudation into the same. Atrophy of the optic nerve shows a decided connection with the size of the pupils, which are found to be contracted in the hyperæmic stage and dilated in the atrophic stage.

Forster's impression of Albutt's statistics is, that the numbers indicating affections of the optic nerve and retina is somewhat too high.

Of all the changes in the insane, observable with the ophthalmoscope, atrophy of the optic nerve is undoubtedly

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the most frequent. Westphal and Leber have demonstrated that this atrophy of the optic nerve is histologically entirely similar to the gray degeneration of the spinal marrow. Amongst the diseases of the spinal marrow, tabes dorsalis, gray degeneration of the posterior cords of the spinal marrow, is often complicated with eye symptoms which have reference to the optic nerve, the eye muscles, and the iris. Amblyopia and amaurosis, mentioned by Romberg as a frequent accompanying symptom of tabes dorsalis, is caused by atrophy of the optic nerves. According to Leber's investigations, the pathologic anatomical changes in the optic nerve are analogous to those existent in the posterior cords of the spinal marrow. No positively correct opinion can be given at present as to the frequency of atrophy of the optic nerve in tabes. Whereas Niemeyer states that "the optic nerve was found atrophied in the rare instances of impairment of vision," Leyden considers amaurosis caused by atrophy of the optic nerve, as "not very rare." Oculists are generally disposed to consider atrophy of the optic nerve as a frequent symptom of tabes, because a relatively large number of cases of optic nerve atrophy occur in tabetic individuals. According to Leber, twenty-six per cent. of all cases of atrophy of the optic nerve were together with tabes or at least spinal symptons. Taking into consideration the fact that atrophy of the optic nerve precedes sometimes for years the ataxic symptoms of tabes, it is very likely that this percentage is rather too small. Forster remembers a number of cases where years passed after complete atrophy of the optic nerves had set in, before disease of the spinal marrow showed itself. According to Charcot, amaurosis may be the earliest, and for a long time the only symptom which afterwards, even ten years later, may be followed by pain and characteristic disturbances in the mobility. Amaurosis nearly always commences with a narrowing of the visual field, especially from the outward. These defects have the tendency of assuming the shape of a sector, the blind spot, never the point of fixation, forming the center of the cir-

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cle. As the visual field goes on contracting from all sides, at last only one point will retain its power of function, which is always situated to the inside of the blind spot. Thus it happens that these patients are for a relatively long time able to read pretty well, even with quite white papillæ, and complain of decrease of vision only, when it is evident ophthalmoscopically that there exists an extreme narrowing of the visual field, and that signs of atrophy have set in. This condition of the visual fields makes it probable that the part of the retina between the optic disc and macula lutea, and the yellow spot itself, are supplied by those fibers of the optic nerve which lie next to its nerve axis; for according to Leber's microscopical examinations, these remain the most often free from degeneration. Another conclusion may be drawn from this, namely, that the process commences first in the trunk of the optic nerve, not in the optic tract, for in the latter case defects in identical parts of the field of vision would be observed which are always wanting. Charcot gives likewise a decided opinion respecting the progress of atrophy from the optic nerve to the tractus opticus up to the corpora geniculata. This agrees with the ascertained fact that atrophies commencing with central defects or with a central negative skotom, do not indicate tabes. Forster never succeeded in watching the gradual development characteristic of this last form of atrophy of the optic nerve in tabetic individuals. He always found in such cases distinct development of the atrophy, but the cold white color of the papilla optica, the scantiness and narrowness of the blood vessels, might become more fully developed at a later period. Although atrophy of the optic nerve nearly always affects both eyes, it may do so in a different degree, for whilst one eye may be entirely blind the functional power of the other eye may be only partially affected.

It is worthy of mention, that among the characteristic subjective symptoms found in tabetic atrophy, although not belonging exclusively to it, is to be noticed an insensibility of sight to certain colors, especially red and green,

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occurring in the later stages of the disease. Another symptom which is characteristic of every form of atrophy of the optic nerve, is a sensitiveness to bright light; the patient's sight is much improved in a dim light.

It has hitherto been impossible to prove anatomically a continuity between atrophy of the optic nerve, caused by gray degeneration, and the gray degeneration of the cords of the spinal marrow. It is therefore probable that we have not to deal here with a process appearing in one place, and then spreading in a centripetal or centrifugal direction, but that the same histological changes become simultaneously or successively developed in those different parts of the nervous system which show for it a peculiar disposition. A cure, or even a lasting improvement in the visual power in this disease, never occurs, and it is extremely rare that there should be even the pause of one or two years in its progress—for *this* atrophy is always progressive, and leads to amaurosis—a temporary improvement in the central acuteness of sight is sometimes observed. These patients, with few exceptions, are greatly inclined to believe that their sight is improving; influenced by this self-deception and free from anxiety, they bear their fate with cheerfulness, and seldom inquire if they are likely to become blind. In this respect they offer a great contrast to glaucomatous patients, who suffer much from the constant dread of losing their sight.

Sometimes, especially at the commencement of tabes, paretic affections of the nerves supplying the eye muscles are met with. The paresis is often of a mild and passing type, but relapses often occur, and the same or other muscles may become affected. In a few instances, a more extensive and continuous paralysis may take place, affecting even several muscles. Disease of the spinal marrow cannot be considered, as is the case in amaurosis tabetica, the cause of these paralytic affections. We can but suppose that they are caused by an affection of the bundles of nerve fibers supplying the muscles of the eye, which take their origin in the floor of the fourth ventricle. Changes in the

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pupils are very frequently observed in tabes. Both pupils are generally smaller than normal; they are of unequal size and react but slightly from light, and are more readily movable when accommodation for near distances takes place. An affection of the centrum-cileo spinale—in the region of the upper thoraic and lowest cervical vertebra—would explain this. Moderately dilated, motionless pupils are also observed. In these cases, as in paresis of certain eye muscles, an affection of the oculo-motor nerve must serve as explanatory cause. Cyon is of opinion that affections of the eye commonly accompany tabes. Out of two hundred and three cases he found one hundred and five with eye affections, viz:

Amblyopic affections	33
Paralysis of eye muscles	30
Mydriasis	3
Contraction of pupils	9
	75
Amaurosis, with affection of eye muscles	16
Amaurosis, with mydriasis	8
Amaurosis, with contracted pupil	1
Affections of eye muscles, with mydriasis	4
	29

Out of twenty-eight cases of tabes, he observed only two cases of enlarged pupils.

Lesions of the spinal marrow may cause changes in the pupil and retina. The fact, ascertained by Argyll Robertson, that in cases of chronic affections of the spinal marrow, the narrowed pupils do not contract from light, but contract when an effort at accommodation is made, exists also, according to Knapp, in cases of lesions of the spinal marrow. Albutt found changes in the retina in connection with lesions of the spinal marrow, such as increased redness of the papilla optica, indistinctness of its outline, distended and tortuous veins, but no true neuritis. There is rather a tendency to recovery, than to the formation of atrophy. Alteration in sight may be very considerable, and it may be very small. The higher the seat of the lesion of the spinal marrow, the sooner are the disturbances in the eye developed.

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Albutt considers that a secondary subacute meningitis at the basis cranii, often found in post mortem examinations, is the cause of this, and opposes the hypothesis of Wharton Jones, who concludes that the retinal disease arises from an affection of the sympathetic nerve, more especially from paralysis of the vaso-motor nerves. The condition of the pupils is of great diagnostic value in diseases of the cervical part of the sympathetic nerve. Many cases are known where sarcomatous tumors of the neck, cancerous tumors, and cicatrices on the neck compressing the sympathetic nerve, have caused contraction of the pupil on the corresponding side. On the other hand, a dilatation of the pupil has been observed, owing to irritation of the sympathetic nerve consequent upon struma or inflammatory tumors. A case has been published (Czermak) where a dilatation of the pupil could be produced by pressing with the finger on the neck tumor.

Of all the symptoms which refer to the sympathetic nerves, myosis is the most frequent and lasting, whilst vasomotoric disturbances only at times make their appearance, and are variable under certain conditions. Lesions of the cervical part of the sympathetic nerve and of the spinal marrow, caused by projectiles or punctured wounds, will occasion pupillary contraction of the corresponding side.

The narrowed pupil, which ensues from paralysis of the sympathetic nerve, contracts little from light, and in the dark dilates less than the normal pupil, so that the difference in the size of both pupils in very weak light is still more striking, especially in the young. The pupil dilates on the application of atropia, but not to the same extent as the pupil on the healthy side, and the shape of the pupil will sometimes in these cases show a deviation from a regular circle.

Paralysis of the cervical part of the sympathetic nerve will produce several other changes in the eye; but generally only after the fundamental disease has lasted for some time. Horner was the first who thoroughly analyzed those symptoms. In 1869, he drew attention to the coincidence

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of simultaneously existing light ptosis and contracted pupil, a symptom observed by many before, but never commented upon, and which he considered the result of a disease of the sympathetic nerve. On the upper, as well as on the lower lid, from the posterior edges of the tarsi, arise smooth muscular fibers, which take their course posteriorly right under the conjunctiva. These smooth muscular fibers are under the influence of the sympathetic nerve, and dilate the palpebral aperture. This has been proved by experiments made by Wagner and Miller on the bodies of decapitated individuals, whose sympathetic nerve they excited. Paralysis of the sympathicus must therefore produce a narrowing of the palpebral aperture owing to the sinking down of the upper lid and the rising up of the lower one. This ptosis, however, never reaches the extent of entirely covering the pupil. The vaso-motoric disturbances are also generally present in their first or second stage.

During the first stage, the well known symptoms of paralysis of the sympathetic nerve show themselves by a raised temperature, increased secretion of sweat, and great redness. The symptoms in the secondary stage are those which depend on atrophy of tissue. The side on which is the paralyzed nerve becomes pale in color, of a low temperature, and there is no perspiration. These symptoms remain unchanged during both stages. A diminished tension of the eyeball has often, although not constantly, been noticed in cases of paralysis of the sympathetic nerve. There exists no satisfactory explanation of this symptom, which may be experimentally produced by cutting through the sympathetic nerve. In cases of paralysis of the sympathicus, of long duration, a sinking back of the eyeball into the orbit has been observed; this is in great measure due to a gradual development of atrophy of the orbital cellular tissue. In opposition to this paralysis of the sympathicus, Brunner has given an account of a case where there was a continued irritation of the sympathetic nerve, and where the left palpebral aperture was larger, and the reac-

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tion sluggish. The left side of the face of this paralytic patient became pale, lean and dry.

Of late, hemicrania has been considered as a vaso-motoric neurosis—resp. as a disease of the sympathetic nerve. This is due to DuBois Reymond, whose attention was first drawn to a cord-like contraction of the temporal artery, and to a dilatation of the pupil on the same side during his attacks of migraine. This form of migraine which he proposed to term hemicrania sympathico-tonica, would thus seem to be a spasm of the blood vessels, or at least to be accompanied by one. But in many cases there is neither a cord-like contraction of the blood vessels, nor dilatation of the pupil, present. On the other hand Möllendorf observed in a patient, during a painful attack of hemicrania, in addition to the known increased injection of the episderal blood vessels, an increased brighter redness of the background and stronger injection of the arteria and vena centralis retinæ, as compared with the healthy side. He considers this condition as an argument in favor of the theory which accounts for the development of migraine as a one-sided anenergia of the vaso-motoric nerves supplying the carotid arteries, which causes a relaxation of these respective arteries and through a one-sided cerebral fluxion to the cerebrum major. Möllendorf makes no statement concerning the condition of the pupil. This form of migraine would therefore, in opposition to the one observed by DuBois Raymond, be caused by paralysis of the blood vessels and be termed hemicrania angio-paralytica of the sympathicus. The papillary symptom which is wanting in Möllendorf's case has been mentioned by a later author, who found distinct contraction of the pupil of the eye on the affected side of the head. The difference in the width of the pupils during the attacks fluctuated between 1–2 min.

The eye sometimes becomes the seat of certain diseases which are, undoubtedly, dependent on an affection of the trigeminal nerves. It is not, however, finally ascertained whether the cause is to be looked for in the disease of the

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true trigeminal fibers or of the sympathetic fibers which accompany them to the eye. These diseases are ophthalmia neuro-paralytica and herpes-zoster ophthalmicus.

The rapid destruction of the corneal tissue often observed in very weak children suffering from profuse diarrhœa, and in rarer instances, also in typhus, is regarded by some authors as a consequence of paralysis of the nerves supplying the blood vessels. VonGrafe likewise considered the corneal ulceration in morbus Basedowii as an neuro-paralytic process, in which the tropic trigeminus fibers, not the sensitive ones, are affected.

Entirely different from these inflammatory forms is the keratitis, which is sometimes met with in complete anæsthesia of the trigeminal nerves. This last form of inflammation seems to be caused by an accidental superficial corneal necrosis of traumatic origin, which occurs more easily when the bulb and its surrounding parts have become insensible. This keratitis, caused by paralysis of the trigeminal nerves, has a destructive character. Protection of the diseased eye from fresh damaging influences, will, however, often cause a cure of the corneal inflammation. A final and full solution of this question has not yet been achieved.

A post-mortem examination made by Wyss, in a most important case of herpes-zoster ophthalmicus, proves conclusively that this disease is dependent on an affection of the Gasserian ganglion, and the trophic-trigeminal fibers proceeding from the same. The microscopic changes in the Gasserian ganglion have all the characteristics of acute inflammation. Additional clinical symptoms, which indicate an affection of the sympathetic fibers arising from the Gasserian ganglion, and are observed in herpes-zoster ophthalmicus, must be mentioned. They are an increase in the temperature of the diseased side, and an enormous decrease in the intraocular tension. Slight cases of chorea-minor are sometimes ushered in by frequent short but strong convulsions of the musc—orbicularis palpebrarum-spasmus nictitans. It seems worthy of mention, that the

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blinking always takes place synchronically in both eyes; whereas, the twitchings of the nostril, corner of the mouth, arm—are only one sided, and do not occur simultaneously in corresponding parts.

Slight hemorrhages under the ocular conjunctiva are sometimes observed in consequence of venous stagnations, brought on by an epileptic fit. At the beginning of the fit, the pupils become, in some cases, enlarged; the countenance, at the same time, turning pale. These symptoms are caused by irritation of the cervical parts of the sympathicus, occasioning contraction of the facial arteries, as well as contraction of the dilatator pupillæ. Ophthalmoscopic examinations have been made of a great number of epileptic patients. During the fit it is seldom possible to examine the background of the eye in a satisfactory manner. It has, however, been possible immediately after the spasm has ceased. Most examinations, however, have been made sometime after the fit had ceased. In epileptic patients have been found sometimes intensely developed engorged papillæ, in all stages, up to total atrophy of the optic nerve disc. From this condition may it be safely concluded that the contents of the cranium have undergone a pretty extensive anatomical change, and that the intracranial space has become narrowed—quite sufficient causes for development of engorged papillæ on the one side, and for the epileptic fit on the other. Considerable impairment of sight, even total amaurosis, is the rule in these cases. Ophthalmoscopic examination is therefore of some importance with respect to the recognition of the cause in each single case, and as regards the prognosis. On the whole, however, well developed cases of engorged papillæ do not seem to occur often in epileptic patients, and no mention is made of this symptom by medical writers. It is necessary, however, to bear in mind, that it is Albutt alone who includes such cases under the term of epilepsy, in which unconsciousness and characteristic convulsions do not depend upon obvious disease of the encephalon. According to the author, simple epilepsy, without organic disease, is generally unaccom-

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panied by disease of the optic nerve; although he has sometimes observed changes in the blood vessels and retina. Out of forty-three cases of idiocy with epilepsy, he found fifteen with changes in the optic disc or retina. Albutt inclines to the opinion that during the fit, and for hours, perhaps days afterwards, the papilla optica has an anæmic appearance. Hughlings Jackson found the papilla optica also whiter during the fit than during the normal condition; the veins were distended and darker. Tebaldi observed in sixteen cases out of twenty of epilepsy, great hyperæmia of the retinal veins, considerable tortuousness and varices of the same, and great contraction of the retinal arteries. With respect to the retinal changes in epileptic patients, the following remarks may also be made:

In cases of symptomatic epilepsy, the condition of the background of the eye, observed with the ophthalmoscope, is found to be dependent on the fundamental intracranial disease; in idiopathic epilepsy, a contraction of the retinal arteries takes place during the fit, a dilatation of the retinal veins and venous hyperæmia developes itself at the same time, owing to venous stagnation during the fit.

SECTION VI.—ON THE RELATIONS EXISTING BETWEEN DISEASES OF THE SKIN AND DISEASES OF THE EYE.

As the exanthema, in acute exanthematous diseases, is only a symptom, the eye affections belonging to that group will be mentioned in Section VIII. Lepra affections belong still less than exanthematous diseases to that group, and will be mentioned in Section IX. The herpes-zoster ophthalmicus has already been described in Section V. The superficial forms, dermatitis, eczema, impetigo, psoriasis, stand mostly in relation to the outer integuments of the bulb, conjunctiva and cornea. In all extended cases of eczema and impetigo, a conjunctival catarrh is observed, particularly if these affections occupy the facial integuments of scrofulous children. Catarrhs of the conjunctiva are then quite severe, the conjunctival folds become greatly

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swollen, and a copious, serous, or even muco-purulent discharge takes place, but never a purulent one, as in gonorrhœal infection. The inexperienced suffer great alarm from the sore and swollen lids which sometimes will remain closed for months; their apprehension, fortunately, is nearly always unfounded, for, as a rule, besides the catarrh, there is only a keratitis superficialis present. The muco-purulent character of these catarrhal affections is caused by the continuous passing over of the purulent secretion from the humid integuments of the lids to the conjunctival surface. This infection undoubtedly increases the catarrh.

In cases of eczema universale, even though the immediate surroundings of the eye have remained intact in adults, a conjunctival catarrh is scarcely ever wanting. The same remark applies to extended cases of psoriasis. These catarrhs of the conjunctiva discharge as soon as the skin disease vanishes; they may be alleviated by astringent remedies, but not cured as long as the disease lasts. On the other hand, conjunctival inflammation, caused by a sort of indiosyncrasy against atropia existing in some individuals, may spread to the skin, for in such cases the integument of the lid becomes œdematous, of a brownish red color, with rough surface, and completely resembles the parts of the integuments in the introductory stages of eczema. It is quite probable that chronic skin diseases, superinducing a marastic state of the whole body, may be productive of cataract. Quite as unique must be considered the cases mentioned by Wrecker and Cooper, who observed the development of pemphigus pustules in the conjunctiva of persons suffering from chronic pemphigus. Developments of pemphigus on the conjunctiva caused in both cases extensive adhesions of the bulb and eyelids.

There are few cases on record in medical literature of erysipelas facial causing blindness, through atrophy of the retina and optic nerve. A remarkable feature is the rapidity with which blindness develops itself. The probable cause in these cases is not so much compression of the

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optic nerve by the orbital cellular tissue which takes part in the process, as by a direct continuation of the inflammatory process along the sheaths of the blood-vessels up to the central artery of the retina. Erysipelas may, moreover, lead to the formation of abscesses in the eyelids and their gangrenous destruction, thus causing lagopthalmos and extended ectropion with subsequent exulceration of the cornea.

SECTION VII.—ON THE RELATIONS EXISTING BETWEEN RHEUMATISM AND GOUT WITH DISEASES OF THE EYE.

Whilst modern ophthalmology, owing to the general darkness still existing regarding rheumatism, shows great reluctance to adopt rheumatism as an etiological principle, there certainly exists affections of the eye, which as they are produced by a cold, may be called rheumatic. We can therefore only refer to the relations existing between diseases of the eye and rheumatism, if it can be proved that these diseases are not idiopathic, but are the result of a direct effect of the cause—the cold—upon the eye itself, and that they are the expression of the rheumatic diathesis of the whole body, or that they stand in some connection with the rheumatism of the whole body

The question is, do such diseases of the eye exist? Forster has no doubt that inflammations of the iris as well as of the cornea, stand in distinct connection with diseases of the joints of a rheumatic character.

Whilst Hutchinson regards cases of iritis which show a decided connection with inflammation of the joints, due to gonorrhæal arthritis as belonging to this group of rheumatic affections of the eye, Forster refers to them as belonging to Section IV, in which the relations existing between diseases of the eye and the genital sphere are mentioned.

Putting aside, however, the cases of iritis connected with this gonorrhæal arthritis, there are undoubtedly cases in

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which inflammatory process in the joints occur in connection with iritis, which have a decidedly atmospheric origin, and must consequently be designated as truly rheumatic. Hutchinson has observed many cases of this kind. The febrile polyarthritis acuta is but very rarely complicated with inflammation of the uveal tractus. Acute rheumatism of the joints may also occur with paralysis of the eye muscles; there is, however, only one case of this kind on record. It is still undecided whether the inflammation of the cornea, known as keratitis interstitialis diffusa, stands in causal connection with inflammatory processes in the joints and chronic periostitis—(Forster), or whether the corneal disease is caused by hereditary syphilis—(Hutchinson).

As to the connection of eye diseases with gout, much less can be said respecting the connection between rheumatism and eye diseases. If gonorrhæal arthritis be excluded, and the trouble not confounded with rheumatism, then eye affections depending on acute or chronic gout, probably never occur. Forster knows nothing from his own experience on this subject, and the many cases published by Hutchinson refer probably to gonorrhæal arthritis and rheumatism, not to podagra and chronic gout which develop from it. Cases of ophthalmia arthritica mentioned in former medical books, are cases of blennorrhœa, iritis and inflammatory glaucoma, but have nothing to do with true gout.

SECTION VIII.—ON THE RELATIONS EXISTING BETWEEN ACUTE AND CHRONIC INFECTIOUS DISEASES AND DISEASES OF THE EYE.

Measles.—Conjunctival catarrh is an essential symptom in measles. The catarrhal affection of the whole respiratory tract, with which the disease commences, always spreads to the conjunctiva, and is easily observable. Conjunctival catarrh in measles is usually well developed. The palpebral conjunctiva is very red, discharging considerably. The ocular conjunctiva is often much injected up to the cornea;

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there is a very disagreeable feeling of pressure in the eyes, which lasts sometimes for days, and is usually attended with marked photophobia. Adler considers the symptoms relative to the conjunctival catarrh, so striking and recurrent, that they would be of use in the differential diagnosis between measles and variola previous to distinct formation of the exanthem. The catarrhal inflammation, which often reaches its greatest intensity on the second day of the exanthem, leads rarely to epithelial abrasions of the cornea. These never form marginal ulcers on the cornea. The conjunctival trouble occasionally assumes a more chronic form. Now and then an eye may be lost by diphtheritis, ulcerative keratitis, or keratomalacia after measles. These cases are exceedingly rare. A change affecting the whole constitution is frequently produced by measles ; and during some subsequent months there is a continual recurrence of catarrhal affection of the eyes, also phlyctenular conjunctivitis, keratitis vasculosa, superficial circumscribed keratitis and blepharitis ciliaris affections, which are generally referred to the development of scrofulosis after measles.

In order to avoid unnecessary repetition, it may be mentioned here that all these *after diseases* of the eye are likewise observed after scarlatina and variola, also after vaccination. Although far from finding in the last fact an argument against vaccination, Forster thinks it quite a settled matter, that the above-named conjunctival and corneal affections often show themselves after vaccination in individuals, who previous to it had never been affected by them. With the exception of the outer integuments, other parts of the eye are rarely affected in measles. There are, though, a few cases on record where amaurosis of a temporary, as well as of a permanent character, have been observed after measles ; these were mostly caused by neuritis optica. Nothing positive can be stated as to the cause of these cases of amaurosis, only, it is all but certain, that they can have no close relationship to the poison which causes measles, judging from the very great rarity of these last

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eye affections, even during a greatly extended epidemic of measles in large cities.

Scarlatina.—As in other acute exanthematous diseases, conjunctival catarrh is met with in scarlatina—more especially during the eruptive stage, although the conjunctival affection is not as constant nor as persistent as in measles or variola. The amblyopia and amaurosis observed sometimes in connection with scarlatina, stand in the closest connection with an affection of the kidneys dependent upon the scarlatinous process.

The cases observed, all show the presence of a considerable degree of albuminuria. It is likewise noticed that amaurosis shows itself first during the period of desquamation, when the patient has been feeling well for some time. Cerebral symptoms, violent headache, convulsions, vomiting, torpor generally precede blindness, which is quickly developed, is absolute at least for a time, and affects both eyes. Ophthalmoscopical examination has always yielded a negative result; the impairment of sight passes off entirely in time. There can be no doubt that these cases must be considered as cases of uræmic amaurosis. The occurrence of this amaurosis is very rare, considering the frequency of scarlatina and of croupy nephritis. The same remark applies to the occurrence of retinitis albuminurica after scarlatina, and is seen more frequently in the chronic form of Bright's disease. The prognosis in retinitis albuminurica caused by scarlatina, and in fact by all acute exanthematous diseases, is better than in cases otherwise originating; although sometimes, secondary atrophy of the optic nerve may have become developed. Accommodative asthenopia is occasionally met with after scarlatina, as well as after measles. Children experience disagreeable sensations in the eyes—a feeling of pressure, of stinging and tension whenever they read or write for any length of time, especially in the evening. These sensations are not felt unless the eyes are used. The range of accommodation need not necessarily be diminished. The children thus affected are always

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hypermetropic, sometimes, however, only slightly. Suitable convex glasses afford relief.

Variola.—Affections of the eye occurring whilst the variola exanthemata lasts, or even after its disappearance, though still having direct connection with the variola process, are very frequent. In no other general disease are eye affections so often observed as in variola. Nearly all parts of the eye may suffer; the lids and lashes, the lid cartilage, the lachrymal sac, conjunctiva, cornea, iris choroidea, even the retina and the eye muscles may participate in the disease; vision is therefore often endangered by smallpox; and previous to Jenner's discovery, this was so often the case, that, according to Andreal, probably as many eyes were lost through variola as from all the inflammatory processes of the eye taken together. Dumont states, that before Jenner's discovery, thirty-five out of one hundred cases of blindness were caused by variola. He found even in the year 1856, that seven per cent of all cases of blindness in France, including old and young, were caused by that disease. The percentage was undoubtedly much less, at the same period, in Germany, owing to the law of compulsory vaccination existing in many German States.

It is the conjunctiva which very frequently is first affected, though not seriously. Conjunctival hyperæmia is nearly always present, especially if the lids have been invaded by the exanthem. In cases of pure hyperæmia there is no increase in the secretion, nor strong injection of the ocular conjunctiva. In other cases, conjunctival catarrh is present. Its intensity is not always dependent upon a considerable pustular eruption over the body, or more particularly on the face. This remark is also applicable to the majority of other variolous affections of the eye, to be mentioned hereafter. But if the exanthem is found on the intermarginal part of the lids, or on the ocular conjunctiva, then a considerable catarrhal injection, with swelling and secretion of the conjunctiva, caused by contact with the variolous pus, becomes developed. These symptoms are sometimes so severe that this conjunctivitis may be mistaken for blen-

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norrhœa, especially if chemosis of the ocular conjunctiva is present. But this variolous blennorrhœa shows unmistakable points of difference to the blennorrhœa caused by gonorrhæal infection. The swelling of the palpebral conjunctiva is neither as great nor as continuous, nor are the granulations as severe, nor is the cornea in as much danger in these cases as in gonorrhæal blennorrhœa; we may therefore safely consider this conjunctival trouble a severe catarrh, as it is often met with in children, especially those of a scrofulous constitution.

In well developed cases of this catarrh, ecchymosis under the conjunctival bulb may occur. In hæmorrhagic variola there is from the very commencement considerable redness in the corners of the eyes, occasioned by ecchymosis and extravasations in the ocular conjunctiva, which increase to such an extent that part of the cornea, and even the pupil, may be covered by chemosis. Well developed ecchymosis of the conjunctiva may certainly be considered as characteristic of hæmorrhagic variola. The integument of the eyelids and the face in general is a favorite locality for the variolous eruption. Ecchymosis in the integument of the lids is rarely absent in hæmorrhagic variola. The extensive eruption of pustules on the lids causes them to swell greatly, preventing the eyes for some days from opening. Blennorrhagic catarrh of the conjunctiva is usually well developed in these cases, and is at times complicated with a corneal affection. On the margins of the lids will often be seen small diphtheritic ulcerations, which leave behind, after protracted cicatrisation, an uneven appearance, a rounding off of the margins of the lids, loss or oblique position of the lashes, obliteration of the excretory ducts of the meibomian glands and secondary changes—concretions in the glands. Abscesses and furuncles may also be found in the eyelid. The ocular conjunctiva is likewise, as is the case with other mucous membranes, occasionally the seat of true variola pustules; these latter exhibit a different appearance from cutaneous pustules; they are mostly smaller, sometimes only as large as a pin's head; they are

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surrounded by considerable injection, and very soon lose their epithelial covering; the round yellowish white spots remain, and resemble the phlyctenular pustules commonly seen in the conjunctiva of scrofulous children. These pustules are generally few in number, about two or three, and are usually found on the ocular conjunctiva—seldom on the conjunctiva of the lids or plica semilunaris, caruncalæ lachrymalis, and never in the depth of the transition part of the conjunctiva. These pustules are always combined with symptoms of conjunctival catarrh. They occupy more particularly the limbus conjunctivalis and may become dangerous by spreading to the cornea and causing ulcers there later. True variola pustules do not occur on the cornea, but ulcerative corneal affections may become developed, induced by conjunctival affection, or they may be independent of the same; they make their appearance at the commencement of the stadium exsiccationis, which, according to Adler, this is never before the twelfth day.

Amongst the corneal affections must be mentioned keratitis circumscripta superficialis, abscess of the cornea, ulcers which may lead to perforation of the cornea and prolapsus of the iris, with remaining synechias, and may even cause purulent destruction of the whole of the cornea and perhaps the panopthalmitis; these ulcers may, however, heal at any stage, although they are of an obstinate character. Extensive ulcerative processes of the cornea are often connected with dangerous complications of other organs. Keratomalacia indicates collapse and a fatal end. The uveal tract, iris and choroidea, do not become as frequently affected as the cornea. Affections of the uveal tract do not begin before the twelfth day after the commencement of the variola, and they exhibit some peculiar features. Plastic iritis is rare; affection of the iris in variola shows a more serious character. It is often connected with choroiditis, leads consequently to the formation of opacities in the vitreous, and takes a slow course. Out of 1,187 variolous patients, Neumaun did not see a single case of primary iritis. Iritis always makes its appearance when

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the other after diseases of variola, such as abscesses, furuncles, etc., have developed themselves. Hirschberg has named this iritis, "iritis postvariolosa," owing to its regularly late advent.

The so called ciliary irritation, which is often found in variola and is characterized by photophobia, lachrymation, and pinkish pericorneal injection, may precede affection of the cornea or iris, but it may exist without being followed by these diseases. Simple ciliary irritation, as well as iritis, are more particularly met with in light cases of variola. Consequent upon affections of the choroid and vitreous, posterior polar and cortical opacities in the lens have been noticed, also glaucomatous inflammation during variola, and cases of neuro-retinitis diffusa and nephritica after variola.

It has been long known that chronic blennorrhœa of the lachrymal sac often occurs after variola. During the last stage of variola inflammation of the lachrymal sac has been observed. There can be no doubt that the exanthem is met with in the lining of the mucous membrane of the lachrymal apparatus, as well as in the mucous membrane of the nose and pharynx.

Typhus.—Eye affections are rare in typhus, and are limited to isolated cases of corneal abscesses or ulcers, to paresis of accommodation of the sphincter pupillæ and eye muscles, and to transitory cases of amaurosis and atrophy of the optic nerve. The few cases of transitory amaurosis known, however, have all occurred in children. It cannot well be denied that some other anatomical changes besides the one observed in scarlatina are at the bottom of these cases of transitory blindness, although in both instances the same part of the brain may be affected. The passing œdematous infiltrations in the brain, which might explain amaurosis in scarlatina, cannot be supposed to cause the same condition in typhus. Although cases of lasting amaurosis during typhus, leading to complete atrophy of the optic nerve, have often been observed, yet no case has been watched from the beginning to the end. Nearly all clinical symptoms and post-mortem examinations are wanting,

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it is therefore impossible to arrive at a safe conclusion as to the cause of the atrophy and its primary localization.

Febris Recurrens.—After the disappearance of febris recurrens a disease of the choroideal tract is sometimes observed, which may exhibit very different clinical symptoms. In by far the greatest number of cases the appearance of opacities in the vitreous body and a corresponding decrease of the visual power, are the first symptoms. These symptoms are sometimes the only ones, but much oftener other symptoms are observed which indicate inflammatory disease of the choroidal tract—for instance, peri-corneal injection which may develop itself into inflammatory chemosis, inflammatory changes in the iris, posterior synechias, slight hypopion, decrease in the intraocular tension, sensitiveness of the anterior part of the bulb and ciliary neurosis. The inflammation appears to be nearly always confined to the front part of the choroid and iris. There are no choroideal changes noticeable ophthalmoscopically. Two symptoms, heretofore not referred to extensively, deserve special mention, viz : first, paresis of accommodation found in the early commencement of choroideal trouble, the iris being intact in several cases; and secondly, the alternating size of the pupils found by Peltzer in convalescents from febris recurrens. The course of this disease is always chronic; it lasts for weeks and months; and opacities of the vitreous may remain for a very long time. Posterior polar cataract, changes in the peripheric part of the choroid, occlusion of the pupil and retinal detachment in rare instances have also been observed. Most of these cases occur between the ages of twenty and thirty years. No satisfactory explanation respecting the connection between this general disease and the eye has yet been given.

Diphtheritis.—It is well known, that after the diphtheritic affection has run its course, muscular paralysis in different parts of the body is sometimes observed. Beside the velum palati, in the upper and lower extremities of the trunks, the bladder and rectum, it has also shown itself in the

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external eye muscles—more particularly in the apparatus of accommodation.

The paretic affections of the accommodative apparatus were formerly mistaken for amblyopic affections, until Donders demonstrated that impairment of vision could be corrected by proper convex glasses, and that its causation should be looked for in the apparatus of accommodation, and not in the optic nerve. In most instances no discoveries are made, either by external or ophthalmoscopic examination. Sometimes the pupil is found enlarged, owing to paralysis of the sphincter papillæ sometimes combined with paresis of the accommodative apparatus. The diphtheritic paresis of accommodation appears to be nearly always bilateral, although the range of accommodation is not always evenly diminished on both sides. A further peculiarity is the increase of the hypermetropic refraction of the eye during this diphtheritic paresis. Schweiger is of opinion that this arises from an increased flatness of the curved surface of the lens, which, during a paresis of accommodation, lasting for a long period of time, is more considerable than during atropia paralysis, which lasts generally a short time. Visual power is at times somewhat diminished during the paresis of accommodation; it regains its normal condition after the disappearance of the paralysis. This fact probably bears no relationship to the optic nerve, but Volkers thinks that it is possibly caused by an astigmatism of the lens whilst developing itself during the long lasting paralysis of the ciliary muscle, and that it disappears as soon as the tension of the muscle of accommodation returns.

The disturbance of the accommodation during diphtheria takes place within a short time—a few days or hours; it rarely amounts to full paralysis; it may last for weeks or months, and disappear gradually. Suitable therapeutic measures have a decided influence on a rapid disappearance of the paretic condition.

By far the greatest number of cases of paresis of accommodation, show themselves from four to six weeks after the commencement of diphtheritis, and from two to three

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weeks after the disease has run down, and is mostly met in young persons. Although there are no satisfactory statistics with respect to the relative frequency of diphtheritic paralytic affections in particular, still, it is certain that paresis of accommodation is one of the most frequent paralytic symptoms occurring during diphtheritis; but paresis of the velum palati, which often appears together with paresis of accommodation, is somewhat more frequent.

Paresis of accommodation shows itself not only after severe cases of diphtheritis, but it may appear after the slightest diphtheritic angina, and in diphtheritis of other parts of the body. These cases refer to diphtheritis of wounds, of the auricle, external earduct, vagina, and diphtheritic infiltration of the salivary glands; diphtheritic inflammation of the throat was wanting in those cases, but paralysis of the lower extremities, velum palati, and impaired sight, were mentioned.

Besides paresis of accommodation, paresis of the motor muscles of the bulb has often been observed, though it is rarer. These paretic affections appear suddenly, disappear, change; leaving sometimes behind them a slight insufficiency of the internus or muscular asthenopia.

Muscular paresis appear also after other acute diseases, such as variola and abdominal typhus. They are in a twofold manner distinguished from the paretic affections occuring after diphtheritis. They nearly always appear after the local disease has run its course, and the general condition of the patient has improved, or they may occur after a very trifling local or general affection. Muscular paralysis in variola or typhus, on the other hand, develops itself before the disease has entirely passed away, during convalescence, and it only occurs after a severe form of the primary disease.

Febris Intermittens.—Taking into consideration the fact that protracted, pernicious, malarial affections may produce the most serious disturbances in the system, it is somewhat surprising that only a few cases of derangement in the organs of vision have been recorded. In these cases amblyopia,

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which revealed no ophthalmoscopic symptoms, disappeared under proper general treatment.

Cholera—In this disease, symptomatic changes in the eye are observed in the lids and the cellular tissue of the orbit, in the secretion of tears, in the conjunctiva, sclerotic, cornea, pupil, choroid, and in the retinal blood-vessels. The early cyanotic appearance of the lids is generally very distinctly observed. The lids cannot close properly, owing to the retraction of the posterior margin of the cartilage of the lids towards the orbit, and a diminished power of the orbicular muscle. The eyeball rolls so far upward that the cornea is entirely hidden from view.

The secretion of tears is much reduced in the conjunctiva and in the lachrymal gland. Patients suffering from cholera do not shed tears, not even during the most painful spasms. The ocular conjunctiva is in all serious cases injected in the lower half, and there is imperfect closure of the lids. The injection affects that part of the bulb which remains uncovered by the lids. The same part of the ocular conjunctiva lacks moisture on its surface. This deficiency is caused by inability of the lids to close, and thus secretion is impeded. Joseph has observed ecchymosis on the lower part of the ocular conjunctiva of a very dark color, and of bad prognostical significance. In severe cases a partial necrosis of the cornea is observed during the stadium algidum, a segment of the cornea, one-half to three-fourths of one line becomes dry and brown, is eliminated after one to two days, leaving behind an ulcer which may enlarge.

In the sclerotic blackish or dirty blue spots are sometimes observed concentrically with the lower corneal margin, which are of fatal significance. The spots are of irregular shape, isolated or confluent, and are probably due to a thinning of the sclerotic, caused by loss of moisture. During the stadium algidum, when the heart beats very faintly, the pupils of the patient are nearly contracted. Graefe refers this symptom to paresis of the sympathetic nerve. In the choroid extravasations of various sizes are

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sometimes met with. Changes in the retinal circulation manifest themselves by an excessive thinning of the retinal arteries, which are then of a strikingly dark color, and if the eyeball be pressed with the finger, though that would have no significance in its normal condition, yet now pulsation of the retinal arteries and even total discoloration of them will occur. This symptom is of manometric value as to the strength of the waves of blood present in the arterial system. The greater the weakness of the heart the smaller will be the circulating quantity of blood, and the easier will it be for complete anæmia of the artery to take place. The retinal veins are of an excessively dark color, and their caliber is unchanged. Notwithstanding the serious disturbances in the retinal circulation, the acuity of sight is, even in the asphyxial form, not at all or but slightly diminished. A perfect ischæmia retinæ has not been observed, and it is still undecided whether the temporary cessation of sight, which frequently occurs during the stadium algidum, is caused by a disturbance in the retinal circulation or in the brain—the latter appears the most probable.

Trichinosis.—The eyelids take part in the œdematous swelling of the face, which is a frequent and early symptom in trichinosis; the œdema passes over to the ocular conjunctiva and to the transition part. The muscles of the eye are also in some cases affected by the immigration of the parasites. The result is deficient movability of the eyeball; the movements are tremulous and cause pain. The muscles of the eye are, however, much more rarely attacked than other muscles.

Kittel has observed greatly dilated and immovable pupils together with paresis of accommodation in trichinosis, and as no trichinia have been found in the smooth, fibrous muscles, the explanation of this symptom is wanting.

Pyæmic, Purulent, and Septic Infection.—In this chapter those eye symptoms will be mentioned which are caused by formation of a thrombus in the cerebral sinus, by crumbling purulent coagulations getting into the choroid

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and retina, and by septic infection of the blood. In these cases, affection of the eye is always caused by inflammatory or suppurative processes in more or less remote parts of the body. Sufferers from serious and quickly developing cerebral symptoms are sometimes affected by remarkable changes in the eyes. These changes are very rare, but when they do occur, it may safely be concluded that thrombosis of the cavernous sinuses is present, as well as of the several veins connected with it, and the prognosis then becomes fatal. These characteristic symptoms are quickly developed and great protrusion of one or both eyeballs, considerable vivid red œdematous swelling of the lids and conjunctiva, which protrude as in panophthalmitis—between the lids, absolute, or very nearly absolute immovability of the eyeball, enlarged immovable pupil, greatly decreased vision or total amaurosis. Athough these symptoms resemble in general those found in panophthalmitis, yet there are other symptoms of that disease wanting, which are found in the eyeball itself, such as occlusion of the pupil through exudation, pus in the anterior chamber, changes in the iris, opacity of the cornea, or these symptoms may make their appearance only at a later stage of the disease. Whilst in panophthalmitis, the infiltration of the cellular tissue of the orbit, the enormous swelling of the conjunctiva, the protrusion and immovability of the eyeball, are caused by inflammation of the choroid, these complex symptoms arise in cases of thrombosis of the sinus from the seclusion of the vena ophthalmica cerebralis, and probably also of the vena ophthalmica facialis. The infiltration thus causing a cessation of a venous circulation in the cellular tissue of the orbit in cases of thrombosis of the sinus, may be either œdematous or purulent. Thrombosis of the sinus and veins may arise from furuncles, abscesses in the face, lesions of the head, meningitis, and puerperal diseases. Crumbling purulent coagulations have been found in one or both sinuses, in the sinus Ridleyi, the petrosal sinus, and in others in the vena facialis, vena ophthalmica facialis, and in the jugularis interna, metastatic abscesses in the lungs were also

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present. Whilst in cases of thrombosis of the sinus, the eyeball shows symptoms of disease, mostly in a secondary degree, symptoms appear in the eyeball primarily in those cases where masses of infectious coagulations are forced into the vascular system of the eyeball. The process then becomes more dangerous for the eye—less dangerous to life. Choroiditis with purulent exudation is sometimes seen in one, rarely in both eyes, in puerperal fevers, in inflammation of the umbilical veins in new-born children, in caries at the base of the cranium, in pyæmia after surgical operations, separation of cellular tissue, pulmonary tuberculosis, endocarditis, empyema, phlebitis after venesection. The sight of the affected eye is quickly and permanently lost in each case. The process in the eye itself may have two different terminations: if the patient survives, either the vitreous and anterior chambers become filled with pus, and perforation of the cornea or sclerotic takes place and the eyeball shrinks and shows only a small bluish spot as remnant of the cornea, or the symptoms may be less severe, the bulb and cornea becoming merely somewhat smaller without perforation taking place.

It is a very remarkable fact that in a great majority of cases these metastatic ophthalmias are caused by diseases in the sexual organ of women, and more especially by puerperal inflammation.

As to the connection existing between pyæmic ophthalmia and the primary seat of suppuration, the same hypothesis must be applied which has served as explanation of the other metastatic inflammations. It is certain that capillary embolism occurs in consequence of small clots coming from an ulcerated endocardium; it is likewise certain that metastatic panophthalmitis may have its origin not only in the choroid, but also in the retina. According to both, a septic retinitis occurs in cases of severe wound fevers and extended suppuration of the joints. This septic retinitis does not lead to an affection of the whole eyeball, but is confined to the retina, and is therefore of a milder type than embolic retinitis and choroiditis. Numerous small

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white or reddish spots show themselves round the papilla optica and macula lutea, generally in both eyes. These observations are the result of post-mortems, no ophthalmoscopical examinations having been made during life.

Syphilis.—Syphilis may give rise to diseases of nearly every part of the eye. The integument and cartilage of the eyelids, the lachrymal apparatus, the conjunctiva and cornea, the uveal tracts, corpus vitreum, retina, optic nerve and the central organs of sight, and the nerves supplying the muscles of the eye, may all become affected. Even the lens, though in an indirect way, may lose its transparency. The lachrymal glands alone are perhaps exempt from the effects of syphilis. As regards the frequency of syphilitic affections clinically presented, in eye patients, the statistics given by Coccius, in Leipsig, show that 7,898 cases of eye diseases were treated during the years 1868 and 1869, of which eleven per cent. were of a syphilitic character; in these cases there were thirty-one per cent. cases of iritis (including complications of that disease); forty-six per cent. of pure iritis; nine per cent. of obscuration of the vitreous; sixteen per cent. of different forms of retinitis; thirteen per cent. of affections of the optic nerve. The following conclusions were arrived at: First, that syphilitic disorders of the eye are more frequently binocular than monocular; second, that syphilitic inflammation in fourteen cases out of twenty-five affects the iris, and in eight cases out of twenty-five the retina; third, that complicated syphilitic affections are for the most part binocular.

Amongst ulcerous affections of the lids, caused by syphilis, a few cases of the soft non-infectious ulcer, and one case of indurated infectious ulcer affecting the margin of the lids, have been noticed. The diagnosis of the last case was secured by the appearance of secondary symptoms.

Gummatous tumors of the conjunctiva are exceedingly rare. The few cases noted were seated close to the outward of the cornea, in the ocular conjunctiva, and were about one-half inch in diameter, surrounded by strongly injected

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conjunctiva; one case has been observed in the palpebral conjunctiva.

Corneal affections, as the expression of secondary or tertiary syphilis without iritis, occur very rarely. Mauthuer describes an affection under this class as, "keratitis punctata." Syphilis never causes an ulcerative form of keratitis; on the other hand, the opinion gains more and more ground, that keratitis interstitialis diffusa is frequently based on hereditary syphilis. Hutchinson thinks that this is invariably the case, and finds in the condition of the permanent upper central incisors a particularly important proof of this ætiological connection. The characteristic malformation of the teeth consists of a dwarfing of the teeth, which are usually both narrow and short, and of atrophy of its middle lobe. This atrophy leaves a single, broad vertical notch in the edge of the tooth. Sometimes, the teeth diverge, and at others they slant towards each other. These deformities are, according to Hutchinson, found in all cases of this form of keratitis. Forster denies this, stating that although the teeth are often found in that condition, there are no cases in which teeth present no deformities; on the other hand, different and frequently recurring conditions and symptoms occur in persons afflicted by this form of keratitis, which make it probable that they are founded on a certain diathesis. This form of keratitis, together with inflammation of the joints and periostitis, and cicatrices near the mouth, are frequently present. There is no other permissible explanation of those long, narrow deep lines, than that they are the cicatrices of those easily bleeding and often deep rhagades of which the physiognomy give so characteristic an expression. Another symptom, which although of rarer occurrence is often observed in connection with those rhagade cicatrices, is a sunken nose. Nearly as frequent as this nasal defect, is a hardness of hearing of both ears. Ulcers of a phagadenic character in the velum palati also exist in patients suffering from this corneal affection.

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If all these symptoms are taken together, viz: the presence of keratitis in both eyes, the recurrence of relapses, peculiar dental malformation, characteristic rhagade cicatrices round the mouth, the sunken nose, the ulcerous destruction of the soft palate, the inflammatory processes in the joints and periostitis, and finally the generally debilitated appearance of the patient, it will be safe to say that a constitutional disease, in all probability syphilis, is the basis of the matter. This probability becomes a certainty if, as is often the case, it is conceded that either the father or mother had suffered from lues, or if one or many of the consequences of that disease are found existing in them.

It cannot be said, however, that keratitis diffusa always stands upon a syphilitic basis, for in many a patient the history of the case reveals nothing, and there are no symptoms indicating syphilis.

The choroideal tractus, more especially the iris, is the part of the eye most frequently affected by syphilis. Fournier believes that iritis occurs in about three or four per cent. of all syphilitic diseases. According to Wecker, out of one hundred cases of iritis fifty to sixty are of syphilitic origin.

That iritis may be caused by congenital syphilis has been proved by some known cases. According to Mackenzie, iritis is pretty frequently the consequence of congenital syphilis, and it may be the first symptom observed.

There exists no pathognomonic symptom common to all cases of syphilitic iritis, so that as a rule the syphilitic origin of iritis must be supposed to exist when other signs of syphilis are present. It cannot, however, be denied that syphilitic iritis possesses certain peculiarities which characterize it more particularly, although not exclusively. In the first place it is of frequent occurrence that when lues is present both eyes are affected, one soon after the other; photophobia, lachrymation, injection, ciliary neurosis, are generally not very severe at the outset of the disease, nor do the cases, as a general rule, assume a violent type, and

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the symptoms increase by degrees. Generally, hypopyon is found wanting, but all this applies to the plurality of cases, and exceptions to the rule are by no means of rare occurrence; opacities of the vitreous body, demonstrating that the ciliary body and choroidea also participate in the process, occur frequently, in about fifty per cent. of all cases, according to Schmidt. The occasional presence of so-called condylomata of the iris, small yellowish tumors near the pupillary edge of the iris, or larger circumscribed tumors on the peripheric part of the iris, which sometimes reach to the cornea and become flattened there, are observed almost exclusively in iritis of syphilitic origin. These tumors are shown by microscopical examinations to be gummatous tumors or syphilitic.

Simple, non-gummatous iritis, by far the most frequent form in syphilis, belongs to the earlier symptoms in lues. It usually appears some time after the eruption of roseola syphilitica, simultaneously with condyloma or pharyngeal affection. Relapses are as frequent as in syphilitic affections generally. The gummatous form of iritis seems to belong to a later stage.

Gummatous tubercles are also met with in other parts of the eye. Barbar describes them as being nearly as large as a cherry-stone. These tumors are of a yellowish red or gray-yellow color; they rise from the sclerotic next the cornea and lie under the movable conjunctiva; they take their origin either from the sclera, or from the corpus ciliare and iris, and may, if they attain a considerable size, cause the eyeball to shrink. In a case described by Hippel, the retina, as well as the sclerotic and choroidea, was the seat of gummatous tumors. These gummatous tumors of the conjunctiva and sclera are, however, exceedingly rare.

Next to the iris, the choroidea is the most often affected by syphilitic disease. Forster excludes for various reasons the so-called choroiditis disseminata, thought by many to be always caused by syphilis. It cannot, however, be denied that now and then syphilis must be looked upon as the cause. He considers diffuse choroiditis syphilitica, as

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described by him in "Graefe's Archives on Ophthalmology, volume 20," as characteristic of syphilis from the symptoms —opacities of the vitreous, hemeralopia, decrease of vision, zonular defects in the field of vision, photopsias—which develop within a few weeks, their frequent connection with iritis, the often recurring relapses, the simultaneous presence of other symptoms belonging to the late secondary stage of syphilis, the never missing, though sometimes imperfect benefit achieved by mercurial treatment, and the simultaneous disappearance of the syphilis of the integuments and of the mucous membranes, harmonize perfectly with the course of a general syphilitic affection. In very protracted cases, a retinal affection developes itself in this form of choroiditis, which, although resembling retinitis pigmentosa, can be distinguished from it. This explains the suspicion entertained by many observers as to the syphilitic origin of retinitis pigmentosa. Both forms exhibit in common the symptoms of hemeralopia, viz: small field of vision, yellow atrophy of the optic nerve, strikingly thin retinal blood vessels, and development of pigment, which takes place particularly in the peripheric part of the background of the eye.

A distinguishing feature of the syphilitic, non-typical form, is the presence of scattered parts in the peripheric parts of the visual field, which have still retained their functional power. The opacities of the vitreous may, however, be so dense in the syphilitic form of choroiditis that an examination of the background is impossible.

This choroiditis syphilitica becomes developed more especially in the mature and later period of life, during which time the predisposition for choroiditis is great. The appearance of choroiditis syphilitica coincides with the later secondary and first tertiary symptoms of syphilis. In this form of choroiditis, the retina is always sympathetically affected from the beginning, so that really no valid objection exists against calling this disease choroidio retinitis; by some it is looked upon as simply retinitis. Forster considers this opinion not justifiable, as the choroid is pri-

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marily and particularly affected, and to all appearances the anterior layers of the retina are much less affected than the posterior ones, which lie nearer to the choroid.

An exceedingly rare form of retinitis is depicted by Liebreich in his atlas (tab. X, fig. 1.) The numerous extravasations, the extended white spots, the very considerable changes in the blood-vessels, distinguish the rare form from the one generally seen in consequence of lues.

Graefe likewise describes a very rare form of syphilitic retinitis as a central, relapsing retinitis, characterized by the appearance of sudden defects round the point of fixation. These may, within a short time, take possession of a large part of the field of vision. Patients are soon unable to read any but the largest test types, and can with difficulty find their way about. Sight is restored in a few days. These attacks occur after the lapse of some weeks or months, and there may be from ten to thirty, even more of such relapses. During the amblyopic period a fine grayish opacity develops itself in the region of the yellow spot, which disappears during the interval. A true neuritis optica, in its various forms, may also become developed under the influence of a general syphilitic affection. Whilst, however, in iritis choroiditis, even in retinitis of syphilitic origin, the local symptoms furnish some clue at least for the ætiology of the affection; we find, thus far, in this neuritis, no characteristic symptom indicative of syphilis—we must, therefore, be guided by the history of the case by other signs of general lues, by the course of the disease, and by the good effects of mercurial treatment. Albutt thinks that a true neuro-retinitis, which spreads from the brain to the eyeball, very often accompanies syphilitic meningitis, and recommends an examination of the papillæ optica in all cases of suspicious headache. Medical works do not abound in cases of syphilitic optic neuritis. By far the largest number of cases of neuritis optica, which are considered as arising from syphilis, exhibit no cerebral symptoms. If the underlying cause of the affection is recognized in time, and a thorough mercurial treatment is carried out, the

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prognosis is in many cases good. It is only in syphilitic neuritis that the fully engorged papillæ are observed to return to their normal condition, and that sight is almost entirely restored.

White atrophy of the optic nerve may be caused by lues; Graefe, however, disapproves of a thorough mercurial treatment, merely founded on this ætiological basis, unless there are important symptoms simultaneously present indicating syphilis, such as paralytic affections of the muscles of the eye, hemiplegia, and severe headache; for mercurial treatment, unless syphilis be at the bottom of the disease, may greatly accelerate the atrophic process of the optic nerve. Amblyopia without an ophthalmoscopic noticeable change in the background of the eye, is more frequent than white atrophy in cerebral lues.

Wunderlich states in his excellent work on luetic diseases of the brain and spine, that "blindness often occurs in cerebral lues. It often arises suddenly, but is usually transitory. Ophthalmoscopic examinations, as a rule, reveal nothing." There is no pathognomonic symptom which can be considered as characteristic of the luetic nature of this disturbance of vision. The antecedents and the accompanying symptoms must be consulted in order to recognize the ætiological moment. The accompanying symptoms may be various, as various as the functions of the brain itself. The correct recognition of the luetic origin of the eye and cerebral disease, is of enormous significance for therapeutic success, supposing of course that the physician is not affected with mercuriophobia—although approving mercurial treatment.

Paralytic affections of the eye-muscles without complication with other cerebral symptoms, are often caused by lues. In these cases the seat of the disease must be looked for either at the basis cranii, or where the nerves pass through the cranial openings, or in the orbital course of the nerves, for in rare exceptional cases the nerves supplying the muscles, and not the muscles themselves, are diseased. Cerebral syphilis and peripheric paralytic affections

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of the nerves supplying the eye-muscles due to syphilis, make their appearance at the earliest from one to two years after infection has taken place; but sometimes they are developed at a much later period, other secondary symptoms being mostly present, or when they had relatively existed only a short time.

Lead Poisoning.—Besides the nervous disturbances which are well known as being occasioned by lead poisoning, such as colic, arthralgia, epilepsia saturnina, muscular paralysis, etc., an affection of the optic nerve may be observed, which at first is curable, but if neglected leads to disturbance of vision, and sometimes to blindness. The ophthalmoscope has revealed to us that the affection of the nerve arising from lead poisoning is either an optic neuritis or atrophy of the optic nerve. Nearly all cases of affection of the optic nerve are preceded by other symptoms of lead colic, various paralytic symptoms, severe headache, etc. The patients are usually house painters, whiteners, and workers in lead factories. With respect to the process which leads to lead poisoning, various hypotheses have been emitted—nothing definite is known. The opinion that uræmia is the cause, may be correct in a few cases, but certainly not in all.

Tobacco and Alcoholic Poisoning.—The lighter cases of chronic nicotin poisoning show themselves so strikingly by disturbance in visual power, that it is the oculist who has the best opportunity of studying them. The patients in these cases are small eaters, and to some extent suffer from want of appetite; the action of the bowels is torpid; the amount of sleep enjoyed is usually insufficient; the action of the heart is generally accelerated; the patients are restless; their hands shake; their manner is often quick and unsteady; they generally feel fatigued; their memory often fails. Sometimes individuals thus affected, and who are of an anxious disposition, will watch their own case, and recognizing the evil, will refrain from excessive smoking. When this cessation does not take place, it often occurs, especially to those no longer in the prime of life, that vision becomes impaired to so great an extent that professional

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help is required. The patients thus affected are often unable to read fine sized types (1.11 Snellen), medium sized print only with trouble, and even occasionally are not able to distinguish Snellen 44. Most of these patients are not only smokers but drinkers (not drunkards), individuals who habitually drink not only at their meals, but often in the course of the day—perhaps four, six, or eight times, alchoholic drinks, beer, grog, wine, etc. There is little doubt, however, that the complexity of symptoms may occur from excessive use of tobacco alone, although it is doubtful if alcoholic drinks, without excess of tobacco, will produce it. Chewing tobacco may likewise cause amblyopia. The true drunkard, often, does not smoke; amongst this class Forster has never observed this amblyopia, although a gradual development of atrophy of the optic nerve is undoubtedly met with in drunkards. The termination of tobacco amblyopia in total atrophy of the optic nerve, is certainly very rare, but a central defect may permanently remain in the visual field. Most patients are cured if they abandon their pernicious habits; they gradually become healthier, and then, and only then, their sight improves. Respecting the connection existing between the effects of tobacco and amblyopia, it is Forster's opinion that amblyopia is caused by the use of tobacco under certain conditions only, namely: if by the use of tobacco or by the simultaneous use of spirits, appetite and sleep have been essentially affected for a long period. A certain inanition seems essential for the development of amblyopia, which does not, however, dispense altogether with the postulate of a specific effect of the nicotin in the fibers of the opticus. The seat of the disease must be looked for in the axial parts of the opticus, not in the brain.

BLOOD POISONING BY BELLADONNA, HYOSCYAMUS, DATURA, MORPHIA, CHLORAL-HYDRATE, QUINIA, SANTONINE.

There are many agents, in addition to lead, tobacco, and alcohol, which if admitted into the body in sufficient

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quantities, will decidedly affect the eye, and produce such characteristic symptoms that in conjunction with other symptoms, a conclusion can be arrived at as to the poisoning material.

The effects of belladonna, stramonium, hyoscyamus, and their alkaloids, on the pupil and on the power of accommodation, are well known. The pupils become motionless and much more dilated than they ever do in simple paralysis of the oculo-motor nerve. The range of accommodation is diminished or accommodation becomes paralyzed, and near objects appear greatly diminished in size. If small doses of atropia are taken internally, a medium dilatation of the pupil with decrease in the accommodative power may occur at a time when there are scarcely traces of other general symptoms, such as dryness of the throat and increase in the frequency of the pulse. Forster has also noticed a diminished accommodative power of the musculi recti-interni after small doses of atropia. Large doses of this drug may disturb sight, and even cause blindness. No definite theory respecting these effects has hitherto been adopted. Opium causes opposite symptoms to these. Narrowing of the pupil is one of the symptoms of acute morphine poisoning. VonGraefe observed a spasmodic contraction of the apparatus of accommodation. No particular symptoms are observed in the eye in cases of chronic opium poisoning. In a few cases where hydrate of chloral has been taken for a long time, in strong doses, hyperæsthesia of the optic nerve, similar to the one observed in cases of kopyopia hysterica occurs.

It is well known that even medium doses of quinine will produce a buzzing sound in the head of many persons—sometimes hardness of hearing—even deafness may ensue after very strong doses. The optic nerve is much less affected than the acoustic, although the first never remains entirely unaffected if large doses are taken. Thau is of opinion that sharpness of sight decreases, the visual field becomes obscure, and the pupils are dilated. Santonine influences in a most interesting manner the power of recog-

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nizing colors. Even after small doses, the spectrum is shortened at its violet end, that color is then no longer seen, and the complimentary color, yellow, preponderates. This "yellow vision" is caused by paresis of sensitive elements in the retina. If larger doses are taken, the power of distinguishing between colors is lost, and "violet vision" ensues; all dark objects appear of a color between ultramarine and violet. This effect soon passes away, and there is a return to the "yellow vision." The effect produced on the eye by that drug lasts only a few hours. Should larger doses be taken they may give rise to dilation of the pupil and amblyopia.

SECTION IX.—ON THE RELATIONS EXISTING BETWEEN CONSTITUTIONAL DISEASES AND GENERAL DISTURBANCES OF NUTRITION AND DISEASES OF THE EYE.

Scrofula.—Scrofula manifests itself not only in the lymphatic glands, bones and joints, but particularly in the skin and mucous membranes. Consequently ophthalmia scrophulosa affects the most often the outer integuments of the eye, the lids and lashes; sometimes the perichondrium of the cartilage of the lids, the conjunctiva and cornea, whilst the iris, choroid, retina, optic nerve, the muscles and nerves are never troubled by scrofulous affections. Scrofula is manifested on the lids by eczematous and impetiginous inflammations, especially in young children; in other cases often combined with those forms of dermatitis, the hair follicles and their surroundings are affected—blepharitis ciliaris. The destruction of the follicles by ulceration may cause either small or great loss of lashes. Scrofula shows itself on the conjunctiva by catarrhal affections, and by phlyctenular eruptions on the ocular conjunctiva; these severe catarrhs are often induced by eczematous disease of the integument of the lids, or by infection of the conjunctiva by purulent secretion which takes place in the surroundings of the eye. In these cases the catarrhs can never be removed unless the eczema has been previously cured.

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The cornea becomes affected under the form of superficial vascular keratitis and superficial circumscribed ulcerative keratitis. In both forms, especially during the progressive stage, severe photophobia is present. The first form may, through repeated relapses, finally cause the formation of the so-called pannus scrophulosis; the last form is observed either in isolated places or in multiple small places; sight is not endangered except by remaining maculæ. Deep-seated ulcers are rarely developed, when they are, it is near the edge of the cornea, perforation of which may be caused and leucoma adherens result. It is worthy of notice, that in these cases of deep peripheric ulcers the formation of hypopyon and secondary iritis are seldom observed.

Scrofulous ophthalmia, mentioned by older writers, is a combination of several of the affections just alluded to. There are, however, in those diseases, no specific characteristics of scrofula. Those diseases may occur without any other symptoms of scrofula, and the presence of one of these affections alone does not justify a positive conclusion as to the existence of a scrofulous dyscrasia. On the other hand, a combination of scrofulous ophthalmia, with swelling of the lymphatic glands, thick upper lip and nose, sore and scaly nostrils, impetiginous eruptions on the face, at the corners of the mouth and in the ears, is very frequently met with, and is characteristic of scrofula. The essential characteristics of these inflammations of the eye which exist in connection with scrofula, are their persistence and frequent recurrence, and necessarily requiring the same internal treatment as for scrofula. With the commencement of puberty these inflammations, together with many other scrofulous symptoms, generally subside.

Leprosy.—Although leprosy, in its various forms, is dying out in Europe, and is only met with endemically on that continent, on some parts of the Mediterranean coast, on the borders of the Black and Caspian Seas, in Norway, etc., yet we possess several detailed communications with respect to affections of the eye in this disease—that these descriptions do not invariably harmonize may be accounted for by the

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fact that leprosy varies in its symptoms in different localities, and that the patients examined belonged to various parts of the globe. Leprous affections make their appearance not only in the parts surrounding the eyeball, but likewise in the cornea, the limbus conjunctiva, the uveal tractus and the retina. Some of these affections have very peculiar features, which are not found elsewhere.

In the cornea leprosy showed itself particularly under two forms; first, by opacity and development of blood-vessels, which spread very slowly from the periphery towards the center; second, by the presence of tubercles. The eyes are mostly affected after leprosy has existed for some years, but the first of the two corneal affections mentioned may make its appearance at an earlier stage of the general disease. That form of disease is the most frequent. The tubercles are of rarer occurrence, but proceed always from the corneal edge. They exhibit yellowish, red or whitish prominences, which slope steeply toward the cornea, and become flatter toward the sclerotic. By degrees they extend over a great part of the cornea, cover it, and may, by their size, prevent the lids from closing; finally, after existing many years, they shrink or ulcerate. Shrinkage of the eyeball, without suppuration, is the usual ending, although purulent destruction of the eyeball is not precluded.

Diseases of the uveal tractus, iritis, choroiditis, seem mostly to follow the corneal affection. Disease of the iris may manifest itself by development of leprous tubercles. These may proceed from the peripheric parts of the iris, and whilst developing may fill the anterior chamber; on the whole, the affection of the iris shows a chronic, degenerative character. The choroid, apparently, is always simultaneously affected, and is the cause of the opacities of the vitreous found at the same time. The frequent exit in atrophy of the eyeball, also finds its cause in an affection of the choroid. Bull and Hansen found the retina unchanged in two hundred patients examined by them ophthalmoscopically, but several times in post-mortems, discovered

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on the peripheric parts of the retina, which cannot be examined ophthalmoscopically, grayish white spots. On the other hand, out of fifty cases of pellagra Tebaldi met with, only eleven cases showing a negative result on ophthalmoscopical examination. This is not surprising, as the nervous system and mucous membrane are relatively earlier, and more strongly affected in that form of leprosy, commonly designated as pelagra, than they are in the other forms of psoriasis and the true tuberculous (nodous) lepra græcorum. Ophthalmoscopical patients, however, show nothing characteristic; eighteen cases of hyperæmia of the papilla, with somewhat distended and tortuous retinal veins; eleven cases of anæmia or slight atrophy of the optic disc.

The region of the eyebrows is more particularly the seat of leprous tubercles—both eyebrows and eyelashes soon fall. Tubercles on the lids are rare; through ulceration they may cause ectropion, lagophthalmia, paralysis of the orbicularis and its consequences, conjunctivitis; keratitis also occurs. In some countries frequent complications resulting from leprosy are met with in affections of the eye. In Bahia, Pertaglia found eight patients out of twenty-eight affected. In other countries, the eyeball rarely is attacked. Some authors explicitly state that the conjunctiva, unlike other mucous membranes, was found free from disease.

Diabetes Mellitus.—Various disturbances of vision are frequently observed in diabetes mellitus. They may be based on the changes in the power of accommodation or refraction; on opacities in the lens; on opacities and extravasations of blood in the vitreous; on retinal affections generally combined with retinal hemorrhages; on insufficiently known affections of the conductory part of the optic nerve, and even of the central seat of vision, which may eventually lead to atrophy of the optic nerve, and finally on paretic affections of the external eye-muscles. It is certain that diabetes may cause rapid decrease of accommodative energy; this shows itself in a strikingly rapid increase of presbyopia. This symptom may be considered as the expression of a certain general debility or muscular weak-

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ness, produced by diabetes, but not as a paralysis of accommodation. Horner mentions a case where refraction of the eye became changed by the axis of the eyeball increasing as the general condition of the patient improved, and the loss of water and sugar decreased.

Opinions vary greatly with respect to the frequency of cataract in diabetes. Out of one hundred and forty diabetic patients examined by Seegen of Karlsbad, he found only six cases of cataract; whilst VonGraefe, whose cases were mostly taken from the graver ones of hospital patients, noticed twenty-five per cent.

Several theories have been brought forward in explanation of the development of diabetic cataract. One is, that diabetic marasmus involving deficient nutrition, causes opacity of the lens; another opinion is that it is occasioned by loss of water, from which the whole body suffers; a third view entertained is, that the cataract is developed by the influence of the chemically changed fluid media which surrounds the lens. Sugar, in the aqueous humor, turns, by decomposition, into lactic acid, and opacity of the lens is thus caused by the acid. In support of this theory several cases are brought forward, in which well known chemists succeeded in proving the presence of sugar in the aqueous humor, and in the extracts of the lens substance. No theory has, however, been considered fully satisfactory. In most cases the cataract is developed in accordance with the zonulary form of development of cataract, which is from near the muscles towards the periphery, and medical works agree in the statement that in all cases where cataract is formed there exists profuse secretion of sugar. Diabetes mellitus has particular influence on the specific sensual (optic) nerve of the eye. Amblyopic affections in diabetes are caused by retinitis, retinal extravasations, with or without degenerative white spots, through atrophy of the optic nerve. There also occur amblyopic affections, showing no noticeable ophthalmoscopic change, either with unimpared field of vision, or with peripheric defects or central scotoms, or with hemiopia. Finally there have been observed more

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or less considerable opacities of the vitreous body which were, at least, partly caused by extravasations of blood into the vitreous body from the retinal or choroideal blood-vessels.

The retinal changes observed ophthalmoscopically resemble those found in retinitis albuminurica; but retinal hemorrhages, together with slight cloudiness of the retina, are prevalent, whilst the exudatious white spots are less developed, or may be entirely wanting. The fully marked changes observable in the retina, noticed sometimes in Bright's disease, such as great swellings of the papillæ, numerous large white confluent patches, etc., are wanting in the diabetic form. Opacities of the vitreous, which do not occur in albuminuric retinitis, may play an important part in diabetes, and even cause blindness.

Some writers are of the opinion that diabetic retinitis occurs only when the fundamental disease has lasted for a long time, and the system has become greatly weakened; but Leber as well as others have observed diabetic affection of the optic nerve, when the general health of the patient seemed almost entirely undisturbed.

Cases of atrophy of the optic nerve, as well as of amblyopic affections, which exhibit no ophthalmoscopic changes, have no characteristic symptoms.

Paralysis of the eye-muscles, of the sphincter papillæ, tensor choroideæ, of the external motor muscles of the eye, the levator palpebræ superiorus, and the orbicularis palpebrarum, has also repeatedly been seen in diabetes mellitus.

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REPORT ON DISEASES OF WOMEN AND CHILDREN.

BY L. MARIA F. WANZER, CHAIRMAN.

TO THE STATE MEDICAL SOCIETY OF CALIFORNIA—Ladies and Gentlemen: Your Committee on Diseases of Women and Children were requested by your President to prepare a report for this Society, showing the changes which have been recently adopted in the treatment of the above mentioned diseases. In compliance the Committee beg leave to submit the following.

During the months of November and December there were many cases of acute bronchitis and pneumonia among children, the origin and termination of the disease being in direct relation to the meteorological conditions. Dr. Henry Gibbons has kindly furnished the following statistics:

"The cold weather of the Winter was not only remarkable for its regular continuity but for its sudden access. This is well exhibited by comparing the temperature of four successive periods of twenty days each, the last of which marks the onset of cold.

	Mean temp. at sunrise.	Mean temp. at noon.
Oct. 15 to Nov. 2—20 days	54° 45′	68° 80′
Nov. 3 to Nov. 23—20 days	53° 45′	61° 80′
Nov. 24 to Dec. 11—20 days	51° 50′	60° 85′
Dec. 12 to Dec. 31—20 days	41° 25′	53° 60′

It is a curious fact that the first twenty days in the above series were the warmest consecutive twenty days in the entire year, and the last twenty days the coldest. From 15th November to the 29th December, inclusive, a period of forty-five days, the wind was almost constantly from northwest to north. There were but three days in that period when it was not in that quarter in the afternoon.

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Only three cloudy days occurred in the same period. The atmosphere was remarkably dry." To these peculiar climatic conditions may be attributed the bronchial and pulmonary complaints with which children suffered during the months of November and December.

Perhaps the only thing to suggest in treatment in addition to what is now generally done by all good physicians, is to urge the use of the thermometer in the little patient's room, that an equable temperature may be maintained. Much knowledge of symptomatic phenomena is acquired by the use of the thermometer. By it clinical investigations are determined with precision in many cases, yet rarely do we find it in the sick room, except when taken there by the physician.

From Dr. Williams, of Richland, two sporadic cases of disease are reported; one of measles, the other of scarlatina; these cases were about one mile from each other, and about the same distance from any other families. Each case well marked; other children in both families, but none of them took the disease—recovery.

In the treatment of cerebro-spinal meningitis the fluid extract ergot is favorably considered by many who have recently used it. Unfortunately, however, if the initial stage has passed without proper treatment, little hope of cure can be offered.

Dentition has given its usual number to the mortuary statistics; in many instances anti-hygienic conditions sustain a causative relation to the deaths.

Our Eastern cities, with a continuous higher temperature in the months of July and August, are not so favored as we are for the cure of their little ones.

Chronic urticaria—several cases of this tedious and troublesome disease have presented themselves for treatment, but after following the teachings of our best dermatologists, the results have not been satisfactory.

Numbers of cases of dystocia, post-partum hemorrhage

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and uterine tumors are reported. In several instances tumors have been received following abortions, in which blood being retained and moulded to the cavity of the uterus had acquired sufficient firmness to be mistaken for a polypus.

Atropine is favorably mentioned in our leading journals for the treatment of puerperal eclampsia. It is given in doses of from one-fiftieth to one-sixtieth of a grain. When eclampsia seems to depend upon an abnormal hyperæsthetic condition of the patient, it acts like a specific, more potent than chloroform or the time-honored venesection.

Dr. Q. C. Smith, of Cloverdale, states that in several instances he has used it, and attests its value. That in one case the hypodermic injection of one-fiftieth of a grain of sulphate of atropia promptly quieted the patient, and after allowing her to sleep two or three hours, the os was dilated, labor brought on and completed without further serious difficulty. No alarming symptoms followed the use of the atropia.

During the past year jarborandi, or its alkaloid, pilocarpine, has been quite extensively tried in the albuminuria of pregnancy. The results of its use by different physicians vary greatly. In the cases reported by Fordyce Barker they were especially unfavorable. The prevailing opinion seems to be that it is of doubtful value in this affection, and that dangerous and even fatal depression is apt to follow its use.

Dr. J. M. Reins, of Crescent City, remarks that the past year has been an extraordinary one in reference to dystocia and abnormal pregnancies, especially so when it is noted that the total population of the county is not greater than two thousand souls, excluding Indians and Mongolians. Accounts of several interesting cases are given, but the limits permitted for this paper will not allow a report of them.

The determination of sex in uteri is a question that recently has attracted considerable attention. Prof. Thury, a French veterinary surgeon of the academy of Geneva,

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made numerous experiments upon domesticated animals, and succeeded in the production of the sex desired—male or female. Whether the human family would be benefited by any discovery in this direction is a question, but surely the person who would give the power to the parents in many instances to control the sex of their offspring would be considered a benefactor. From Drs. Heitzmann, Swift, Neftel, Napheys, Mudd, Upjohn and others, various contradictory statements have been given, so that as yet no more of a law is established than when observations first began.

Thomas' operation, laparo-elytrotomy, as a substitute for Cæsarian section, is being carefully considered at the hands of the medical profession. The operation had been performed by Ritgen once prior to the date at which Thomas performed it in 1871, and then cast aside. We have reports of all the operations thus far performed—five in number. Three by Dr. Skene of Brooklyn, and two by Dr. Thomas. Of the five mothers three were living, and the number of children delivered alive was four; these are better results than can be shown for the Cæsarian section or embryotomy. Dr. Thomas does not yet regard laparo-elytrotomy as an established standard operation, but one sufficiently tested by experiment to involve discussion of the great question in science. He thinks that hemorrhage may occur, owing to the vascular vaginal supply, but as neither the peritoneum nor uterus is cut, the danger of inflammation is greatly decreased. Whatever the future may determine as to the application of laparo-elytrotomy, surely the success thus far achieved is a great triumph in obstetrical surgery.

Prof. Porro, of Pavia, May 21st, 1875, is attracting the attention of the accoucheurs of Italy, Belgium, Germany and Austria. Porro's operation, removal of the uterus, ovaries and broad ligaments, was performed to arrest what threatened to be a fatal hemorrhage, and notwithstanding puerperal fever was raging in Pavia, his first operation was crowned with success. The operation has been performed

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fifteen times; the results being seven recoveries and eight deaths.

An interesting operation in operative gynecology has been performed within the past year by Dr. L. C. Lane. The operation was enucleation of the uterus by the vagina for the cure of epithelial cancer. Time alone can determine whether permanent cure has been effected.

Numerous cases of ovariotomy have been recorded during the past year—several in our State.

Dr. Charlotte B. Brown successfully performed the operation April 20th, 1878, cyst multilocular. The solid tumor weighed seven pounds, and the fluid removed weighed twenty-three pounds. The solid portion was composed of cysts in every stage of development.

Dr. Burgess reports another case—the first in this State reported as being performed in strict accordance with the anti-septic plan. The patient was seventeen years old; tumor unilocular, weight, twenty-eight pounds; adherent more or less anteriorly but not elsewhere; pedicle ligated with silk and dropped, incision less than four inches in length; the result was full recovery without drawback of any kind, in about eighteen days. All the details of Lister's anti-septic method were fully carried out; notes of which Dr. Burgess by request has been kind enough to send, and which, as he has recently been making careful studies in Europe, it is hoped may be of interest.

Dr. Burgess says: "The theory upon which Listerism is founded is well known and needs no comment. The advocates of that method seem more disposed to point to its results than to discuss its modus operandi." It may be well, however, in this connection, to refresh the memory by a brief reference to some of the details of the anti-septic method as applied to ovariotomy.

In addition to the usual preparations for the operation it will be necessary to provide:

First—An efficient spray producer.

Second—An ample supply of the antiseptic solution.

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Third—Antiseptic gauze and silk protective (or thymol cotton).

Fourth—A waterproof sheet of thin rubber or mackintosh—say five feet long by three wide, with an oval hole for the abdomen about eight inches long by six wide.

Fifth—Suitable trays or shallow dishes to contain the instruments, ligatures, needles, etc., submerged in the disinfectant solution; also a wash basin containing the solution in which the operator may conveniently cleanse his hands during the operation.

A steam spray producer is preferable to the hand ball apparatus, and it should be capable of furnishing a good volume of spray for at least two hours without the necessity of refilling either the lamp or boiler. Codman and Shurtleff's or Dr. Weir's modification of Lister's apparatus, will fulfill these requirements. I have found Dr. Weir's apparatus satisfactory.

By placing the spray producer, when in use, at the right of the patient and operator, so that the current of vapor may pass somewhat obliquely across the field of the operator, it will probably give the least inconvenience to all concerned. The solution used for spraying purposes is of the strength of one part of carbolic acid to twenty of water. It is estimated that this is reduced by the steam to a strength of about one to forty. For thorough disinfection and certain germ destruction, the one to twenty solution is required.

It is therefore requisite that the skin of the part to be operated upon, the hands of the operator and his assistants, every instrument, sponge, ligature, needle, in short every object liable to be brought into contact with the parts exposed by the operation, shall be treated to this solution, and thereby disinfected. But this strong solution, unless in oil, is highly irritant to freshly cut surfaces, so that it is desirable to use weaker solutions for the sponges, etc., after they have been passed through the stronger. The instruments, silk, etc., may be transferred to a one to thirty or one to forty solution while in use. The wound is dressed

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in the usual manner—that is, it is covered first with the silk protection, and then with the folded gauze; but enough of the latter may be used to pad out under the plasters and binder, instead of the raw cotton commonly employed. A sheet of rubber cloth or mackintosh in the last or top fold of the gauze should not be forgotten.

Instead of the protective and gauze, Mr. Spencer Wells often uses thymol cotton; and the borated cotton has sometimes been used. Perhaps neither of these are so absolutely safe as the gauze, but they are more conveniently used. Mr. Thornton, at the Samaritan Free Hospital, London, places a broad fold of lint, soaked in the carbolic solution, over the silk protective, and then covers the whole with the gauze. Should it be found desirable to direct the current of the spray straight along the line of incision during the operation, the upper border of the water-proof sheet covering the patient may be held up so as to protect her face from the spray. It is hardly necessary to add that the after dressings must be made under the spray and with all the antiseptic precautions until the wound is completely cicatrized.

It will bear repetition that the success of the antiseptic method depends upon the exercise of great cleanliness, and the minutest attention to details, so that the contact of even a single living germ with the parts exposed shall be rendered absolutely impossible.

To Dr. W. H. Mays belongs the honor of having performed the latest reported operation of ovariotomy. Operation, February 23d, 1879; large multilocular tumor; imprisonment of stump and complete recovery. The details of other less successful cases would be very instructive could we obtain them, but unfortunately as a rule we are not willing to report our failures.

All of which is respectfully submitted.

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ESMARCH'S BLOODLESS METHOD IN SURGICAL OPERATIONS.

BY A. B. NIXON, M. D.,
SURGEON-IN-CHIEF OF THE CENTRAL PACIFIC RAILROAD HOSPITAL, SACRAMENTO.

The bloodless method in performing surgical operations upon the extremities of the body has been, by common consent of surgeons, attributed to Professor Fredrich Esmarch as the author, as it was through his efforts and practice that this mode of operating was first brought to the general notice of the medical profession. The appliance used by him for the purpose of pressing the blood out of the limb to be operated on, was simply composed of two rubber bandages, about four or five feet in length, one being about twice the width of the other. These bandages are the invention of Professor Esmarch, and are now called Esmarch's tourniquet, and can be found for sale in almost any well-furnished surgical instrument store. In San Francisco it can be found at Folker's, on Montgomery street, Occidental Hotel building. The wider of the two bandages should be first applied to the limb as a roller, and sufficiently tight as to press the blood upward toward the body, and carried sufficiently high so as to include that part of the limb to be operated upon; then the other bandage should be similarly applied above the first and made secure. The lower bandage is then to be removed, when the limb will be found bloodless and ready for the operation. The limb should be cleanly shaven, and the patient put under the influence of an anesthetic before the tourniquet is applied. Everything now being ready, the operation can be commenced, when it will be found that the

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soft tissues are nearly destitute of blood—there not being sufficient to scarcely soil the surgeon's instruments, and none whatever to drip from the incisions. In cases of amputation the mouths of the arteries will be discovered perfectly empty, and can be much more readily found than in operations by the old method, as there is no venous blood oozing out of the wound to obscure them, and no need for sponging by an assistant. Torsion may be made upon the small arteries whilst the larger ones can be ligated. After all the arteries are thus secured, the remaining bandage should be slowly removed, and if any small arteries should spring they can be secured by further torsion or ligatured.

I think a surgeon should be in no hurry in closing up the wound after an amputation, but better to wait until all oozing of blood ceases, and the cut surfaces become glazed, as it were, with a film of plastic lymph, after which the flaps can be neatly and gently pressed together, and secured by the interrupted silver suture. As a dressing for the stump, after amputation, I prefer several thicknesses of patent lint, saturated with a lotion composed of clear tepid water, with the addition of about one-thirtieth part of carbolic acid, and this applied as a compress, and secured in place by a bandage. This dressing should be changed daily as long as there is any drainage, or the escape of fluids of any kind. It will generally be found that union by first intention has taken place, and that the spaces between the sutures are well closed, and the margins of the integuments neatly approximated by the slight and gentle pressure of the bandage; but should there be any gaping, such spaces can be easily closed by narrow strips of adhesive plaster. On a first dressing I am not in favor of applying any strips of adhesive plaster, although formerly it was my practice to do so. A stump will drain much better without them, and afterward they can be applied, if needed. A stump dressed as above described appears to drain in a great measure by the capillary attraction or suction of the wet compress, and any suppuration that does take place is

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generally drained off, along the course of the ligature. The stump should be laid upon a soft bed of cotton wool, and elevated upon a pillow at an angle with the body of about forty-five degrees.

With these preliminary remarks, I will now proceed to report two cases of amputation—one of a leg and the other an arm—by the bloodless method. One of these was for chronic disease of long standing; the other a recent case of traumatic injury. These two cases are the first of almost any condition of system that a surgeon is liable to meet with in practice, except cases of cancer, and even in such cases I would not hesitate to use this method, if practicable.

Case First.—W. W. Pierce, aged fifty-nine, was admitted into the Central Pacific Railroad Hospital, January 6th, 1875. About twelve years before his admission he suffered a compound comminuted fracture of the lower third of his right leg. The leg made a bad recovery, and ever after gave him trouble. Upon examination of his limb, I found the tibia to a considerable extent necrosed and ulcerated. After treating the case for some weeks with reference to a cure, I finally informed him that I had no hope of saving his leg, and advised amputation as the only means of saving his life. On receiving this information he appeared much depressed in spirits, and said that he would much prefer to die as he was than to take the risk of the operation with the consequent mutilation. The limb continued to get worse all the time, and the disease was rapidly involving the ankle joint and foot. The pain at times was excessive. Purulent discharge was very copious, and much of it of a sanious and offensive character. From this drain upon his system and from the pain he suffered, he became greatly emaciated. To all appearances his time for this world was growing very short, when all at once he made up his mind to have his leg taken off. This was somewhat of a surprise to me, and I told him that I thought in all probability the time for an operation had been deferred too long. He then asked me if I still thought that amputation of the limb was

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the only chance for his life. I told him I had no doubt of that, and that I would get him ready for the operation on the following day. He appeared quite impatient about the delay, and manifested anxiety for the operation.

Having read in 1873, in a medical journal of San Francisco, a description of Esmarch's bloodless operations, as published in a letter from London, written by Dr. G. L. Simmons, of Sacramento, I concluded, that as this was a case that would not bear the loss of blood to any great extent, I would try it; but not having the proper tourniquet, I obtained some ten or twelve feet of half-inch India rubber tubing, and used that. On the 29th of March, 1875, I had the patient placed under the influence of chloroform, and after elevating the limb so as to assist the venous blood to gravitate towards the body, I applied the tubing as a bandage—commencing above the diseased tissues, and carried it up a few inches above the knee, and made it fast. I then removed the lower part of the bandage up to within a few inches of the knee, and again made this fast. I now proceeded to operate, when I found the soft tissues apparently quite bloodless. I performed the flap operation about the lower end of the upper third. The stump was dressed as before described, and the wound united throughout its whole extent by first intention. No case could have done better. There was not a half ounce of blood lost in the operation. After the operation he had no more suffering, and he very soon commenced regaining his flesh, and on the 28th of June he left the hospital, having fully recovered his health. He is now engaged in business on the corner of Fourth and Townsend streets, San Francisco, and gets along quite well with the use of an artificial leg.

Second Case.—E. P. Snyder, aged forty-three, brakesman, had his right arm crushed from the hand to the elbow by two truck-wheels of a heavy freight car passing over it. The accident occurred at the summit of the Sierras, consequently several hours intervened before I saw him. He was brought to the Railroad Hospital as soon as possible, and immediately put upon the operating table. After the

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administration of an anesthetic, I applied Esmarch's tourniquet, and amputated at about the lower end of the middle third of the humerus. There was scarcely a drop of blood lost during the operation. The stump was dressed as before described, and union by first intention the result. He was confined to his bed but a few days, and at the end of three weeks he left the hospital, feeling quite well, and but very trifling tenderness of the stump. Indeed, the case made the most rapid recovery that I have ever witnessed.

In applying the elastic tourniquet it does not require to be drawn very tightly, but just sufficiently to check the arterial circulation. Under the gradual tightening of the elastic bandage the capillaries rapidly empty into the veins, and the blood is thus forced upward into the body, leaving all the blood-vessels empty. How long a limb could bear this pressure I am unable to say, but in the two cases above reported there appeared to be no injury whatever sustained.

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PERI-UTERINE CELLULITIS AND ITS SEQUELÆ.

BY ELIZABETH GRISELLE, M. D.

Although this disease was recognized as early as the second century, and received brief mention during the few following centuries, it seems, subsequently, to have been either overlooked or misunderstood by medical writers, until Dr. Wiseman, of England, in 1679, and Puzos, of France, in 1743, called more particular attention to its existence; and within a period remembered by many present, Nouat, as well as some of the most eminent of the medical profession in Great Britain, began to discuss with clearness and accuracy, the nature of the affection. During the last decade, leading physicians in this country and in Europe have studied it carefully, both clinically and in post-mortem examinations.

There appears to be a diversity of opinion among eminent gynæcologists in regard to the frequency of this disease. In a practice of over twenty years, I have not met with it extensively, but have frequently had the most troublesome and grave sequelæ to contend with, which were caused either by this or pelvic peritonitis, which leads me to suppose that its existence may sometimes be overlooked, or its symptoms be confounded with those arising from disease of the fallopian tubes, ovaries, abdominal peritoneum, or viscera. Its discovery may require careful scrutiny, for cases often assume the sub-acute, and not infrequently the chronic form, before a physical examination is attempted. Even then, the diagnosis of diseases of the pelvis requires the greatest skill, as there are many difficulties to contend with. Eminent surgeons have repeatedly diagnosed the

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presence of ovarian tumors, and have laid open the abdominal cavity to find their mistake.

Pelvic cellulitis seldom occurs primarily, except in connection with abortion or parturition, but may result from acute retroversion of the uterus, or other morbid states of that organ, or surgical interference with it. It depends, too, in great measure, frequently, upon a strumous and sometimes a syphilitic diathesis. There is often, doubtless, failure in distinguishing it from pelvic peritonitis, which is found more frequently among women who have never been pregnant, and although the two disorders almost always complicate each other, they are essentially different in their characteristics, as the tissues affected differ; the one cellular and the other serous.

Many gynæcologists consider peri-uterine cellulitis as a disease affecting only the areolar tissue between the broad ligaments and that which is in immediate contact with the uterus, but the rapidity with which the inflammation spreads by continuity of structure to all surrounding tissues, makes the distinction of less significance. We know that acute metritis, where it exists, implicates the surrounding organs; that ovaritis and endometritis are often the cause of pelvic peritonitis. That must be a limited peri-uterine cellulitis which does not also become pelvi-peritonitis, and seldom occurs except in that portion of tissue lying between the cervix uteri and the bladder. Intra-uterine injections, entering the fallopian tubes, often cause contraction with violent, acute salpingitis, which, in turn, may produce peritonitis by the extension of the inflammation from the mucous membrane with which it is continuous.

The tender roof of the vagina, the contracted utero-sacral or broad ligaments, the enlarged and often displaced ovaries, all interfere with a clear understanding of these cases, especially where a complete history of the initiatory stage cannot be obtained. Cases of recurrent peri-uterine cellulitis are generally, if not always, associated, either remotely or recently, with gonorrhea; this disease in a latent form may predispose to repeated attacks, with only slight appreciable

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cause. It is generally admitted that lateral dislocations of the uterus, especially in which the whole of the axis is involved, have their origin in contractions of the ligaments, which, doubtless, are the result of acute cellulitis. In a large majority of these cases there may be traced a history that will prove gonorrhea to have been the cause, the patient having been infected so gradually that particular attention was not paid to the developing symptoms until the disease had progressed almost imperceptibly to those structures in which, with the aid of some exciting cause, it passes into an active stage. Eminent authorities consider this disease symptomatic of uterine or ovarian inflammation, and seldom idiopathic.

Dr. Barnes states that in dividing the os externum for dysmenorrhea, three fatal cases of pelvic cellulitis have occurred in his practice; and Dr. Emmet says that this disease will follow in a certain number of cases where important operations have been performed upon the uterus.

Dr. Thomas, in his excellent work on diseases of women, says he has observed that usually one side only is affected in cellulitis; doubtless this fact will account for a majority of the cases of lateral versions of the uterus. In examining statistics I find it recorded that among one hundred and five cases of latent gonorrhea where mal-position of the uterus was observed, either lateral or antiversion occurred most frequently. Latero-version, having a marked tendency to the right side, is the most commonly observed dislocation in those women known to be suffering from latent gonorrhea. It has also been observed that where abortion or parturition had caused the inflammatory condition, whether associated with gonorrheal taint or not, there was greater liability to terminate in suppuration than in those caused by accident.

Permit me briefly to mention a case or two in illustration of the gravity of the results of pelvic cellulitis. I was called to see Mrs. N., thirty years of age, with a naturally strong constitution, who was in the fourth month of pregnancy, being a primipara. She had been suffering for

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several weeks from the most persistent nausea and vomiting; not being able to retain even liquids within the stomach. Ten years before, she had traveled by stage twenty-four hours without evacuating the bladder, and in jumping from the coach she was attacked by violent pains, followed by vesical distension and all that nervous derangement which is connected with acute retroversion. The charlatan who attended her did not comprehend her condition, and the catheter was not used, nor was any attempt made to restore the uterus to its normal position. Narcotics relieved the tenesmus, relaxed the sphincter urethra, but failed to lift the fundus uteri, and pelvic inflammation followed, of which I could not obtain a clear history, causing adhesions that held it fixed in this mal-position. Unsuccessful efforts had been made by several physicians to break up the adhesions during the years that followed, but as her health did not seem to suffer to any great extent, no very vigorous measures were taken to relieve her. Dr. Barnes, whose writings add so much to our knowledge concerning this disease, tells us that, practically, these adhesions frequently disappear; that the constant strain of the pelvic organs, in their functional movements, causes the adhesion to undergo atrophy, either complete or partial. This lady was not so fortunate. However, the existence of pregnancy, with its consequent enlargement of the uterus, inaugurated a strife between the adherent tissues and vis natura, which was striving to lift the gravid uterus from its Promethean bondage. Her life was only saved by the evacuation of the contents of the uterus, and it afterward required months of patient and cautious efforts to break up the adhesions, in which I was greatly aided by the use of a stem pessary, which, by its constant pressure, accelerated their atrophy. The fact that she has lately borne a healthy child, with no more than usual suffering, is evidence that these troublesome conditions sometimes yield to treatment. In this case there was no possible gonorrheal taint, and there was no recurrence of the disease at any period, although her treatment was, from necessity, not always gentle.

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I have now under my care a lady of rather delicate health generally, over thirty years of age, who is pregnant four and a half months. She has been married twice, and during her first marriage she had a healthy child with no difficulty at the time of her confinement. Since living with her second husband she has had four miscarriages, produced, I am told, by herself, although she persistently denies, to me, ever having had any. The last one, occurring a year ago, resulted in pelvic cellulitis, followed by suppuration, adhesion, and mal-position of the uterus; the fundus being toward the right side. Not knowing the patient then, I can give no account of the train of symptoms at that time. During the first six weeks of her present pregnancy there were no symptoms demanding the care of a physician, but at the end of that time she was suddenly taken with violent pains, chills, vomiting, and excessive perspiration and prostration. Her temperature being at first below the normal, and afterwards rising to 103°, and the pulse reaching 130. She gradually and only partially recovered from this attack, when another paroxysm occurred of equal violence. Since that time the almost insupportable accompaniment of attacks of angina pectoris has made her case one of real danger. Her extreme thirst, with nausea, and inability to retain medicines in the stomach, renders her case difficult to treat. She has tympanitis and tenderness over the hypogastrium, and occasional tenesmus. The increasing size of the uterus, and the natural tendency to rise above the brim of the pelvis, keeps the adhesion constantly on the stretch, producing inflammation of the peritoneum and a train of constitutional disturbances. The thermometric range varied, sometimes only a degree above the normal, while the pulse was as high as 130 per minute, the action of the heart being accelerated by the pain rather than the inflammation. Her temperature gradually reached 102°, but is now almost stationary at 99°. If the remote results of abortions, which may produce so deplorable a condition, were even dreamed of by the persons who tamper

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so ignorantly and desperately with life, they would be horrified at their recklessness.

I cannot close without referring to Dr. Skein's admirable work on diseases of the bladder and urethra, where he speaks of the effects of acute peritonitis and cellulitis in causing great distress in the region of the bladder, with dysuria. He says the adhesions formed by the product of inflammation, are in some cases sufficient to prevent the normal filling of the bladder, and frequent urination then becomes a necessity. Another sequel of cellulitis is retrocession of the uterus, in which this organ, without changing its axis in relation to the superior strait of the pelvis, rests in the posterior portion of the pelvic cavity, and is firmly fixed. The bladder is drawn backward, and is very irritable, with inability to empty it without resort to the catheter.

If peri-uterine cellulitis were not immediately dangerous, the more remote results would render its occurrence one of the most deplorable that can happen to woman.

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GALVANISM,

IN THE TREATMENT OF PUERPERAL CONVULSIONS—THE RELIEF OF PAIN IN TRAUMATIC INJURIES AND OTHER PAINFUL CONDITIONS.

BY Q. C. SMITH, M. D., OF CLOVERDALE.

The main object we have in view in offering this brief paper is to call the attention of our fellows more particularly to the general usefulness of electricity in ordinary practice, and especially galvanic electricity.

Experience and observation have taught us not to regard electricity as an unfailing specific in the treatment of any class of diseases, but to invoke its invaluable aid for the cure or relief of many diseased or painful conditions. We are all aware that previous to the introduction of the recently improved electrical apparatus, that general practitioners were deterred from using electricity in ordinary practice, and more especially the galvanic current, which is far the most useful form.

But such obstacles and objections now no longer obtain, and therefore we hope to be pardoned for earnestly suggesting to those of our fellows who have heretofore neglected this invaluable therapeutic agent, to hasten to bring to their assistance this most serviceable and powerful remedy. We have devoted much and close attention to electro-therapeutics, yet we do not feel capable of deciding which form or mode of application will, in every given case, produce the best results. We have found galvanism the most useful form in daily practice; while in some cases, especially paralytic, magnetic electricity serves an invaluable purpose. But for the relief of pain or spasm, almost regardless of their cause, the constant galvanic current

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has no equal; to call your attention to the practical usefulness and benefits of electricity in its different forms and various modes of application, would weary your patience and insult your intelligence; we would respectfully refer you to the following works, which we have consulted: "The Electric Bath," by Scheig; "Lincoln's Electro-Therapeutics;" "Reynolds' Clinical Uses of Electricity;" "Neftel's Galvano-Therapeutics;" "Tibbitts' Hand Book of Medical Electricity;" "Morgan's Electro-Physiology and Therapeutics;" "Meyers' Electricity," by Hammond; "Beard and Rockwell's Medical and Surgical Electricity."

We have had considerable experience with Pulvermacher's galvanic belts and chains, and find them very useful in many cases; one great point in their favor being the convenience and simplicity of heir application. The points against them are: the weakness, inconstancy and unsteadiness of their current and early exhaustion of the apparatus; but in the practice of country practitioners, especially, they may be made to give relief in many cases that could not, conveniently, be obtained from any other source.

For the application of galvanic electricity at or near the office, or in more or less grave cases, we use Bartlett's thirty-six rubber cell battery, as lately improved by the Galvano Faradic Manufacturing Company of New York, and find it a very convenient, efficient and useful apparatus. We have treated but one case of puerperal convulsions by galvanism. The case referred to was as follows: Mrs. W., Anglo-American, age twenty years, married two years, highly nervous temperament, aborted twice, frequently suffers from "bad nervous spells," both before and since marriage. February 17th, 1879, was called in haste to see Mrs. W.; found four physicians present, who gave the case up as hopeless, and went away. The patient was six months advanced in pregnancy; had been suffering frequent and severe convulsions for eight hours, which were still recurring with unabated frequency and severity. Chloroform, both by inhalation and stomach, and other

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anti-spasmodics, had been freely administered; morphia and hydrate-chloral hypodermically injected, and in fact the usual line of treatment had been exhausted, without any apparent benefit. During the brief interim of the convulsions the patient lay quiet, breathing heavily, in deep coma, which to relieve we essayed to bleed from the arm; found the blood very dark, and so thick that it would scarcely run, so that notwithstanding we made a large opening in two veins, we could get only a few ounces of blood. The pulse was slow, feeble and labored. This small bleeding produced no appreciable effect upon the circulation or convulsions.

At this critical juncture it occurred to us that my Sampson anti-spasmodic remedy, galvanic electricity, would aid us in this agonizing strait; and our battery being in order, we hastened to bring it, and applying one pole—the negative—to the os uteri, which was firm and closed, and the other mobile over along the dorsal and lumbar spine, and turned on first five, then gradually increased to fifteen cells. Just when we were arranging the electrodes the patient showed signs of another oncoming convulsion; but as soon as the current began to flow she became quiet, and after it had run at the strength of fifteen cells for half an hour, the patient again showed signs of a recurring convulsion, and we increased the strength to twenty-five cells, and thus allowed it to run for one hour, and as no indication of the convulsions returning were manifested, and the skin where the external electrode was applied had become quite red, the circulation much better, and the patient sweating profusely over her whole body, we gradually diminished the strength of the current, and removed the battery; watched the case, and awaited further developments. The convulsions had been recurring every fifteen to thirty minutes. The patient's tongue was so swollen, as a result of severe biting, and her mouth and throat burned by the reckless use of chloroform, so that for several hours it was impossible for her to swallow, and quite difficult even to breathe. The stethoscope told us that the fœtus was dead.

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We watched the patient five or six hours, no more convulsions occurring, the patient slowly improving. We now thought proper to remove the fœtus—what Tyler Smith and other high authorities say to the contrary notwithstanding; and believing ourselves now, thanks to galvanism, masters of the situation, we gave free hypodermic injection of ergot, dilated the vagina and os uteri well with Barnes' dilaters, kneaded the womb, and brought on contractions, ruptured the bag of water, turned the fœtus (female), and delivered by the feet, and the placenta immediately—as we usually do—by firm, steady, external pressure or squeezing. During the operation of delivery the patient was somewhat restless, and at times moaned as if in distress, and lost about a half pint of blood, with apparent benefit, as the coma soon began to pass off.

Suffice it to say, further, that the patient made a good recovery.

Case Second.—May 25th, 1878, was called in great haste to see Mr. H., a large, strong, middle-aged man, who had just received severe injuries by holding a truck wheelbarrow while a large box was being rolled upon it, the great weight of which instantly crushed him to the floor, severely straining the muscles of his body, arms and legs, and more especially the muscles of his back, in the lumbar region. When we reached the patient, a few minutes after the accident, he was suffering the most exquisite and excruciating pain possible. We immediately administered, hypodermically, one grain of acetate morphia, and gave by the mouth quinine five grains, fluid extract aconite five drops, chloroform one dram, and applied chloroform and aconite liniment to the painful parts for half an hour, all of which mitigated the pains only in a small degree. Not daring to give more opiates at once, we then thought of our galvanic battery, and hastened to bring it, and applied the electrodes mobile over the painful parts, frequently reversing the current, using only eight to ten cells. The patient experienced immediate relief, became quiet, and to the alarm of the bystanding crowd, went to sleep—they think-

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ing he had swooned away, as previously his groans had been incessant. We continued the application of galvanism for one hour, gradually diminishing the strength of the current to five cells, and the patient slept quietly three hours. When the patient awoke he felt but little pain, but efforts to move himself revealed considerable muscular soreness, which was greatly relieved by mobile weak frequently reversed galvanic currents. Within forty-eight hours the patient was able to walk around and look after his business.

These are merely given as illustrative cases, and elaborate comment on our part seems unnecessary.

We have frequently used galvanism very successfully for the relief of gastric disturbance, nervous and sick headache, backache, earache, rheumatism, neuralgia and nervous derangement in its various forms and manifestations. And for the prompt relief and permanent cure of the persistent severe cerebral pain, caused by inhaling the poisonous fumes emanating from quicksilver reduction works, we know of no remedy or combination of remedies that are comparable to galvanism. And its remedial electrolytic power, as manifested in the treatment of this class of ailments, is truly wonderful. We have treated with galvanism quite a number of this class of cases, some of which had been skillfully treated with drugs, for several weeks or months, with little or no apparent benefit, and which were grave and unpromising indeed, and these cases would experience marked relief from the first seance, and steadily improve until more or less completely restored.

To briefly sum up our confirmed and deliberate opinion of the curative value of electricity, as substantiated by our own experience, and as corroborated by the experience and observations of others vastly superior to our's, forbearing the tedious details of particularized cases, we must say that physicians who now fail to bring its aid to their assistance, in the treatment of diseased or painful conditions, willfully deprive themselves of a remedy, the scope, power and availability of which is not nearly equaled by any other therapeutic agent.

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REPORT OF COMMITTEE ON NECROLOGY.

BY GEO. HEWSTON, M. D., OF SAN FRANCISCO, CHAIRMAN.

JOHN T. CROOK.

John Taylor Crook, M. D., was born in New York City, July 14th, 1834; was educated in one of the large schools in that city. He entered, for the study of medicine, the office of Doctors Willard Parker and Robert Watts, Professors, respectively, of Surgery and Anatomy in the College of Physicians and Surgeons, at which College he matriculated, and from which

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he graduated in 1857. He was, soon after, appointed assistant to Dr. Henry N. Whittelsey, Resident Physician at the Nursery Hospital on Randall's Island. This institution, under the control of the Alms House Board of Governors, cared for children at the charge of the city, whose ages were from two to fourteen years. Dr. Crook remained upon the Island three years; the last two years, owing to the continued ill health of Dr. Whittelsey, the entire care of the Medical Department rested upon him.

About this time, the Legislature of New York abolished the "Old Board," substituting therefor the "Board of Commissioners of Public Charities and Corrections." Among the changes made by the new Board was the abolishment of the position of paid assistant to Dr. Whittelsey, and the annual appointment of two assistants, to serve one year without salary. It was the good fortune of the writer of this to serve one year under Dr. Whittelsey, and he is most happy to record the testimony of his honored teacher regarding his former assistant Dr. Crook. He invariably spoke of him with affectionate regard, placing him high as a man and as a physician.

After leaving Randall's Island, Dr. Crook was employed as surgeon by the Panama R. R. Co. and the Pacific Mail Steamship Co., in all some seven years. He made several voyages between New York and Aspinwall, was stationed for a time on the Isthmus of Panama, made several voyages down the South American Coast, but the greater part of the time was spent on the steamers plying between Panama and San Francisco.

He then became a resident of San Francisco, and was appointed Medical Examiner for the Mutual Life Insurance Co., of New York, which position he held until his death. In these several positions, the records of the companies show that he filled them with credit to himself, and to the satisfaction of his employers. Besides his insurance duties, he engaged to a certain extent in private practice in his profession, and was regarded by his patients, not only as a skillful physician, but a warm, true friend.

In December, 1874, he was appointed by the Coroner of San Francisco to make such autopsies as the office required, which position he held for more than three years. His reports are models for directness and conciseness. As a medical witness in criminal cases, where he had made an autopsy, we have the testimony of judges, lawyers, and juries, as to the clearness of descriptions and the value of his opinions.

Dr. Crook was for a number of years a member of this Society, and as such a strong advocate for legitimate medicine; was a member of the Board of Censors for 1876-7. A slight infirmity in speech prevented his being prominent as a debater, but those who have heard him speak when occasion required, will bear witness to his well chosen words and terse sentences. He was also a member of the San Francisco Medical Society,

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also member and Secretary of the San Francisco Medical Benevolent Society, being one of its founders and holding his office from its incorporation till his departure from the city.

Some months previous to his death, he showed some signs of cerebral disturbance, and he was advised to seek rest and relaxation. He accordingly left San Francisco in February last for New York via Panama. As far as can be ascertained, he arrived at Panama in about the same condition as when he left San Francisco. On the Atlantic steamer, two or three days from Aspinwall, acute symptoms of a typhoidal character developed. He arrived in New York unconscious, from which condition he never rallied; he died two weeks after arrival, March 22, 1879. His father, sister, and devoted friends were constantly with him till the last moment, without receiving a word or look of recognition.

In closing this brief and of necessity imperfect sketch, the writer begs to add his own testimony, drawn from long personal acquaintance with our deceased fellow member. I ever found him a good friend, a pleasant and intelligent companion, a skillful physician. He had his faults, like all of us, but—

"E'en his failings lean'd to virtue's side."

ABRAM B. MEHRING.

Dr. Abram Buffington Mehring was murdered by Wm. J. White, in the City of Visalia, California, on the evening of the 12th day of September, A. D. 1878.

His age was thirty-five years. He was born in Maryland, on March 17, 1842. He was an only son, and left an orphan at the age of seven years. He was taken in charge by his uncle, Dr. Buffington, of Baltimore, and given a collegiate education. He graduated in medicine in the University of Maryland, and he commenced the practice of medicine in Baltimore, which city was his home, until he came to California, in 1869.

After the battle of Gettysburg, he was sent with other surgeons of Baltimore to assist in the care of the wounded. He was married in 1866 to Lila T. Thorburn, of Albany, New York.

Upon his arrival in California, he located in Woodland, Yolo Co., where he won many friends, and was much respected by all; he also acquired a large practice in his profession. In January, 1876, he moved to Visalia, with a view of improving the health of his invalid wife. He was a gentleman in all things, a zealous student, and honorable physician; a protector of innocence, not a destroyer of virtue. He was never known to have an enemy until the hour which witnessed "the deep

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damnation of his taking off." This tragedy is one of the saddest that has ever occurred in the history of the profession of California. It cast a gloom over the entire community, and plunged into life-long grief the wife who was one of the happiest in our midst.

GEORGE C. CHASE.

George Clement Chase was born in Corinsh, Sullivan County, N. H., September 16th, 1811, of English and Scotch parentage. His literary education was obtained at Dartmouth College, and his medical education in the medical department of that institution, whence he graduated Nov. 18th, 1847. He commenced the practice of his profession, first in Lyndon, Vt., but afterwards, in 1851, removed to California and settled in Downieville, where he continued to practice until his death, July 19th, 1878. His illness was protracted over a period of six months, and although not accompanied with extreme suffering, yet he seldom left his bed for more than a few moments at a time.

Dr. Chase became a member of the State Medical Society at its reorganization in 1870; attended but one meeting of the Society, which was in 1872. Living in this remote portion of the State, he was excluded from making an extensive personal acquaintance with the profession, but to those who knew him best he was the upright, honest man. "For all, he ever had a kind word and a gentle smile." His acts of charity were limited only by his means to give. His habits of life were always very temperate, never having used intoxicating liquors or tobacco in any form, except when prescribed by a physician. He was a successful practitioner, especially among children, whom he loved and over whom he had great control.

Dr. Chase held the office of Coroner in Sierra County several years. He was also physician to Sierra County Hospital for a term of five years, during which time he enjoyed the confidence of the Board of Supervisors, and the good will of the inmates of the house. He was more than usually alive to the moral interests of society, and, both by precept and example, sought to elevate it to the highest standard. His soul was full of music, which he cultivated and taught, and, wherever his lot was cast, he was generally the leader of a choir. But over and above all, he was the honored Christian gentleman and a member of a Christian church, at the time of his death.

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HEMAN P. BABCOCK.

Dr. Babcock was born in the City of Buffalo, State of New York, in 1840. His father was a prominent lawyer of that city, and the son was afforded every opportunity for a complete education, both in his native place and at Yale College.

He studied medicine in the office of Dr. Rochester, of Buffalo, and graduated at the medical department of the University of Buffalo, Feb. 24th, 1863. He had pursued his studies with such diligence, that he sustained a satisfactory examination before the Naval Examining Board, before he received his diploma, and was appointed assistant surgeon in the navy, where he remained seven years, serving on the Potomac and James Rivers during the war of the Rebellion, and afterwards serving on the East India Station, where he was at one time shipwrecked, and barely escaped with his life. He resigned from the navy in 1868, and entered the Pacific Mail service, serving on the vessels running between San Francisco and Hongkong. He resigned his position in the P. M. Co., and settled in Oakland, in the Summer of 1869. He was an active and zealous member of the Alameda County Medical Association, and held, at various times, every office in the gift of that organization. He was one of the charter members at the reorganization of the California State Medical Society, and was seldom absent from its meetings. He was a member of the Board of Examiners of the State Society, from the original formation of the Board, and, at the time of his death, was President. Dr. Babcock's executive capacity was of the first order, and he was a most untiring worker. In his treatment of his co-laborers he was always a gentleman, and I have never known a man more careful and conscientious in all matters pertaining to medical etiquette, and he might well serve as a model in this particular. During the Summer and Fall of 1878, he suffered from an attack of typho-malarial fever, and as he did not regain his health, at the beginning of Winter he took a journey to his native city, and died, while there, on December 27th, 1878.

A post-mortem revealed the existence of an abcess behind the liver, and opening into the right pleural cavity.

The Society has lost a member whose place it will not be easy to fill, and the community has lost a physician whose skill was undoubted, and who was a credit to the honorable body of which he was a member.

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DR. I. E. OATMAN, TREASURER, in account with CALIFORNIA STATE MEDICAL SOCIETY, CR.

1878.			1878.		
April 16.....	To balance brought forward.....	$653 84	April 30.....	By cash paid Dr. Tyrrell, sundries, as per vouchers.....	$142 85
April 30.....	To cash per Dr. Tyrrell—dues.....	361 00	May 3.....	By cash, Bancroft & Co., printing Med. Laws.....	56 00
May 8.....	To cash per Dr. Tyrrell—dues.....	54 00	May 8.....	By cash, rent of hall and gas at San Jose...	45 00
July 1.....	To cash per Dr. Tyrrell—dues.....	250 00	May 8.....	By cash, Mercury Co., San Jose, advertising and printing.....	9 00
Oct. 3.....	To cash per Dr. Tyrrell—dues.....	95 00	June 21.....	By cash, H. Gibbons per C. M. Bates for Board of Ex.....	100 00
Oct. 3.....	To cash per Dr. Tyrrell—sale transactions.	3 00	July 1.....	By cash, Dr. Tyrrell, sundries, as per vouchers.....	31 23
1879.			Oct. 1.....	By cash, R. B. Cole, bill of A. Kuner...$54 Amount still in Cole's hands..... 19	73 00
April 13.....	To cash per Dr. Tyrrell—dues.....	65 00	Oct. 11.....	By cash, Crocker & Co., printing transactions.....	430 26
			Oct. 3.....	By cash, Dr. Tyrrell, sundries, as per vouchers.....	21 40
			Oct. 5.....	By cash, E. Bosqui & Co., lithographing and engrossing diplomas.....	417 00
			Oct. 24.....	By cash, C. M. Bates for Haight & Taylor.	50 00
			1879.		
			April 13.....	By cash, Weaver for printing.....	2 50
			April 13.....	By cash, Dr. Tyrrell as per voucher.....	5 60
		$1,481 84			$1,383 84
			April 16.....	By balance.....	98 00
April 16.....	To balance on hand.....	$98 00			$1,481 84

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ANNUAL REPORT OF C. M. BATES, M. D., Treasurer of Board of Examiners of the Medical Society of the State of California, for Year ending April, 1879.

DR.		1878.	CR.	
Rec'd from Secretary for applicants	$118 00	April 15	By cash due Treasurer	$30 80
Rec'd additional for applicants	350 00	May 28	L. Robinson, traveling expenses	47 00
Rec'd from Dr. Oatman, Treasurer State		May 28	J. F. Montgomery, traveling expenses	15 00
Medical Society	100 00	May 28	J. B. Cox, traveling expenses	14 00
Rec'd from Dr. Montgomery	8 60	May 28	Sacramento Record-Union	8 00
Rec'd additional for applicants from Sec'y	30 00	May 28	San Francisco Bulletin Co	10 50
		June 11	C. A. Murdock, printing	1 75
		July 1	A. L. Bancroft, sundries	12 50
		July 8	Secretary, as per vouchers	15 65
		July 29	Express Newspaper and Printing Co	7 50
		Aug. 9	J. B. Cox, traveling expenses	6 00
		Oct. 25	J. B. Cox, traveling expenses	6 50
		Nov. 6	Bancroft & Co.'s bill	2 50
		Nov. 18	Bancroft & Co.'s bill	20 00
		Nov. 25	H. P. Babcock's bill	15 75
		Nov. 25	J. F. Montgomery's bill	11 00
		Nov. 25	J. B. Cox, traveling expenses	6 50
		1879.		
		Jan. 7	J. B. Cox, traveling expenses	7 00
		Jan. 7	P. A. Espina's bill	15 00
		March 7	J. B. Cox, traveling expenses	6 50
		Feb. 18	J. B. Cox, traveling expenses	6 50
		March 12	H. Gibbons, Secretary, sundry expenses	8 35
		April 2	J. B. Cox, traveling expenses	6 00
		April 2	J. F. Montgomery, traveling expenses	10 50
		April 15	A. L. Bancroft's bill	7 50
		April 15	A. L. Bancroft's bill	8 00
		April 15	C. M. Bates, sundry expenses	20 00
		April 15	A. L. Bancroft, sundry expense bill	1 00
		April 15	P. A. Espina, as per bill	6 00
		April 15	H. Gibbons, Jr., Secretary, salary	100 00
	$606 60		Balance cash on hand	173 30
To balance cash on hand	$173 30			$606 60

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CONSTITUTION AND BY-LAWS OF THE SOCIETY.

ARTICLE I.

TITLE OF THE SOCIETY.

SECTION 1. This institution shall be styled "THE MEDICAL SOCIETY OF THE STATE OF CALIFORNIA."

ARTICLE II.

MEMBERS.

SECTION 1. The members of this Society shall consist of delegates from permanently organized local medical societies, ordinary and honorary members, who shall collectively represent and have cognizance of the common interests of the medical profession in the State of California.

SEC. 2. Each delegate from a local society shall hold his appointment for one year, and until another is appointed to succeed him, and shall participate in all the business and affairs of the Society on paying the usual dues of five dollars.

SEC. 3. Each local society shall have the privilege of sending to this Society one delegate for every five of its regular resident members, and one for every additional fraction of more than one-half that number of its members.

SEC. 4. Qualifications for membership shall consist of a good primary and medical education, attested by a diploma from some known medical school of good repute, and a good professional and moral standing in the community in which such candidate may reside. A license from the Board of Examiners of this Society shall also be required of every candidate.

Ordinary members—Every physician who shall properly satisfy the Board of Censors by the exhibition of his diploma that he possesses the necessary qualifications as prescribed, may become an ordinary member of this Society,

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and all those who may hereafter serve in the capacity of delegates to the Society, together with such other persons as may receive the appointment by unanimous vote, shall thereby become permanent members; *provided*, that no physician shall be considered eligible to membership who may reside within any location where there is a local medical society, and who has failed to become a member thereof, unless there be some special reason assigned for his election; and no voucher or vouchers of any member or members shall be taken as satisfying evidence of any applicant's qualification for membership.

SEC. 5. Honorary members shall consist of such distinguished *savants* and others as may be deemed worthy of the compliment. They shall receive their appointment by a vote of the Society, and upon a motion of some member present.

SEC. 6. Each individual, prior to taking his seat as a member of the Society, must sign the Constitution, inscribing his name and address in full, specifying in what capacity he attends, and if a delegate, the local society which he represents. Every member shall be entitled to the diploma of the Society, to which shall be attached the seal* of the Society, and the signature of the President and Permanent Secretary.

SEC. 7. The seal of this Society shall always be kept by the Permanent Secretary.

ARTICLE III.

OFFICERS.

SECTION 1. The officers of the Society shall be President, four Vice Presidents, one Permanent and two Assist-

* The seal that has been adopted shows enough of the beautiful design of the seal of the State to declare the common origin of the Medical Society and of the State of California, while the cock that was wont to be sacrificed to Esculapius, representing "vigilance," is crowing out 1870, the year of reorganization; and the serpent, emblematic of "sagacity and long life," lies entwined around the doctor's staff at his feet. Thus Vigilance and Sagacity typify the qualities a physician should possess under the direction of Minerva.

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ant Secretaries, a Treasurer, and a Board of Censors of five members. These officers shall be nominated by a committee of one member from each county represented, on the morning of the second day of the meeting, and be elected by ballot, except Permanent Secretary. Each officer shall hold his appointment for one year, and until another is elected to succeed him.

SEC. 2. The President shall preside at the meeting, preserve order, give a casting vote in case of a tie, and perform all other duties that custom and parliamentary usage may require. He shall organize and open the meeting next succeeding his election, by an address on some subject connected with medicine, or with the interests of the Society. He may also fill by appointment all vacancies that may occur from death or other causes.

SEC. 3. The Vice Presidents, when called upon, shall assist the President in the peformance of his duties, and during his absence, or at the request of the President, one of them shall officiate in his place.

SEC. 4. The Permanent Secretary shall reside in Sacramento, and shall authenticate the proceedings; give due notice of time of next meeting; shall serve as a member of Committee on Publication; shall preserve the archives and unpublished transactions of the Society; shall hold correspondence with other permanently organized societies, both domestic and foreign, and see that all the published transactions are promptly distributed to the members entitled to receive them. This officer shall not be subject to annual election, and shall not be removed except for cause shown.

SEC. 5. The Assistant Secretaries shall record the minutes, notify members of committees of their appointment, and of the duties assigned them; and, in the absence of the Permanent Secretary, one of them shall perform his duties.

SEC. 6. The Treasurer shall have immediate charge and management of the funds as a property of the Society, and hold them subject to the disposal of the Society. At each annual meeting he shall present a report, setting forth the

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amount of moneys received, as well as the amount disbursed, and for what purpose.

SEC. 7. The Board of Censors shall examine the credentials of all candidates for admission to the Society, and if such credentials are found to conform with the requirements, as enacted in Article II of this Constitution, the Board of Censors shall recommend said applicants to the Society as suitable candidates for election.

ARTICLE IV.

MEETINGS.

SECTION 1. The regular meetings of the Society shall be held annually, and commence on the third Wednesday of April.

ARTICLE V.

STANDING COMMITTEES.

SECTION 1. The following Standing Committees, each composed of five members, of whom the first named is Chairman, shall be nominated at every annual meeting by the President elect, for the purpose of preparing and arranging business for each ensuing year, and for carrying into effect the orders of the Society not otherwise assigned, namely:

On Practical Medicine and Medical Literature.

On Surgery.

On Obstetrics.

On Medical Topography, Meteorology, Endemics, and Epidemics.

On Indigenous Botany and the Domestic Adulteration of Drugs.

On Public Hygiene and State Medicine.

On Histology and Microscopy.

On Mental Diseases and Medical Jurisprudence.

On Medical Education.

On Publication.

Of Arrangements.

On Prize Essays.

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SEC. 2. The Committee on Practical Medicine and Medical Literature shall prepare an annual report on the more important improvements effected in this State in the management of individual diseases; the improvements and discoveries which may have been made in Anatomy, Physiology, General Pathology, Therapeutics, and Medical Jurisprudence.

SEC. 3. The Committee on Surgery shall prepare an annual report on all the important improvements in the management of surgical diseases effected in the State during the year, and as far as can be ascertained, the number of capital operations peformed, with their results.

SEC. 4. The Committee on Obstetrics shall prepare an annual report on the important improvements in the obstetrical art, and in the management of the diseases peculiar to women and children, effected in the State during the year, together with such remarks touching these subjects as they may think proper.

SEC. 5. The Committee on Medical Topography, Meteorology, Endemics, and Epidemics, shall prepare an annual report on the peculiarity of the soil and climate of the different sections of the State, with the diseases to which they are subject; also the endemics and epidemics which have prevailed throughout the State during the year.

SEC. 6. The Committee on Indigenous Botany and the Domestic Adulteration of Drugs shall prepare an annual report on the indigenous medical botany of the State of California, paying particular attention to such plants as are found to possess valuable medicinal qualities, and are not accurately described in standard works, and the localities where they are found. Also, to report on the quality of drugs brought to our market, with the view to correct the evils arising from the extensive introduction and sale of spurious and sophisticated articles.

SEC. 7. The Committee on Public Hygiene and State Medicine shall prepare an annual report on all subjects germane to this important branch of medical science.

SEC. 8. The Committee on Histology and Microscopy

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shall report and demonstrate such valuable facts and discoveries, annually, bearing directly or indirectly on medicine and surgery, as they may think proper.

SEC. 9. Committee on Mental Diseases and Medical Jurisprudence. This committee shall report on all psychological questions, and on such matters appertaining to medical jurisprudence as in their judgment may be deemed advisable.

SEC. 10. The Committee on Medical Education shall prepare annual reports on the general condition of medical education in the State of California, as compared with the state of medical education in other States of the Union, noticing the several medical institutions of the State, their course of instruction, the practical requirements for graduating, the modes of examination for conferring degrees, and the reputed number of pupils and graduates at each during the year; together with such other matters as they may deem worthy of consideration in reference to medical education and the reputable standing of the profession.

SEC. 11. The Committee on Publication—of which the Permanent Secretary must constitute a part—shall have charge of preparing for the press, and of publishing and distributing, such of the proceedings, transactions, and memoirs of the Society, as may be deemed worthy to be published.

SEC. 12. The Committee of Arrangements shall be composed of members residing in the place at which the Society is to hold its annual meeting, and shall be required to provide suitable accommodations for the meeting, to report on the credentials for membership, and to receive and announce all voluntary communications made to the Society.

SEC. 13. In order to afford the Committee on Medical Topography, Meteorology, Endemics and Epidemics, and on Indigenous Botany and the Domestic Adulteration of Drugs, material for their several annual reports, it shall be the duty of the several auxiliary societies in the State to transmit to the Chairman of these respective committees, on or before the first day of March of each year, a special

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report embracing such information touching their particular localities as may enable said committees to make full reports on all subjects committed to them.

SEC. 14. The Standing Committees shall constitute sections, after the manner of the American Medical Association, to whom all papers shall be referred upon the first day of the session, and who shall report to the Society those papers that seem of sufficient interest for reference to the Committee on Publication; also those that seem of sufficient importance to be read before the Society, by title, abstract or *in extenso*, upon the second day of the meeting.

ARTICLE VI.

VOLUNTARY CONTRIBUTIONS.

SECTION 1. After the reading and discussion of the annual reports, or at any other period during the meeting of the Society, by the vote of two-thirds of the members present, it shall be the privilege of any member to present to the consideration of the Society, either orally or in writing, communications on medical subjects, reports of interesting cases, or such other matters as may be deemed of interest to the profession, which communications may on motion be referred to the Committee on Publication, and if deemed by them worthy of preservation, shall appear among the proceedings.

ARTICLE VII.

FUNDS AND APPROPRIATIONS.

SECTION 1. The funds of this Society shall be raised by individual voluntary contributions, by the sale of its publications, and by an annual tax of five dollars on each member of the Society, on the payment of which he shall be entitled to a copy of all the publications for the year.

SEC. 2. The funds thus raised may be appropriated for defraying the expenses of the annual meetings; for publishing the proceedings, memoirs, and transactions of the Society; for enabling the Standing Committees to fulfill

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their respective duties, conduct their correspondence, and procure the material for the completion of their stated annual reports; for the encouragement of scientific investigations by prizes and awards of merit, and for such other purposes as the Society may from time to time direct.

SEC. 3. Any member who shall fail to pay his annual dues for two successive years, unless absent from the State, or for other reasonable causes, shall be dropped from the roll of members, after having been notified by the Permanent Secretary of the forfeiture of such membership; and no member so dropped shall be reinstated in his membership until he shall have paid all arrears due by him.

ARTICLE VIII.

DELEGATES TO THE NATIONAL MEDICAL ASSOCIATION.

SECTION 1. The Society shall annually appoint, to represent it in the American Medical Association, one delegate for every ten members, and one for every additional fraction of more than one-half this number, whose certificates of appointment shall be signed and duly authenticated by the President and Secretary.

ARTICLE IX.

CODE OF ETHICS.

SECTION 1. The Code of Medical Ethics recommended by the National Medical Association, held in Philadelphia in May, 1847, having been approved and adopted by this Society, shall have the full force and effect of any Article of this Constitution.

ARTICLE X.

DISCIPLINE OF MEMBERS.

SECTION 1. Any violation of the provisions of the Constitution or of the Code of Ethics adopted by this Society, shall be referred to the Board of Censors for adjudication, from whose decision an appeal may be taken to the Society. Such violation being reported by the Board of Censors to

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the Society, and established to the satisfaction of a majority of the members, the individual or individuals thus offending shall be excommunicated, and deprived of all the privileges of membership.

SEC. 2. The Society shall have jurisdiction in all cases of appeals taken from auxiliary societies, in which event their decision shall be final.

ARTICLE XI.

AMENDMENTS AND ALTERATIONS.

SECTION 1. No amendment or alteration shall be made in any of the Articles of this Constitution, except at the annual meeting next subsequent to that at which such alteration or amendment may have been proposed, and then only by the concurrence of two-thirds of the members in attendance.

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ORDER OF BUSINESS.

The following order of business is presented as a by-law of the Society, which shall at all times be subject to a vote of a majority of all the members in attendance, and, except temporarily suspended, shall be as follows:

I. Organization of meeting.
II. Report of the Committee of Arrangements on the credentials of members after the latter have registered their names and addresses, etc.
III. The calling of the roll.
IV. The reception of members not present at the opening of the meeting, and the reading of notes from absentees.
V. Reception of members by invitation.
VI. The reading and consideration of the stated annual reports from the Standing Committees.
VII. Reading and discussion of voluntary contributions.
VIII. The election of officers and place of annual meeting, and appointments by the President elect to fill the Standing Committees.
IX. Resolutions introducing new business, and instructions to the Standing Committees.
X. Unfinished and miscellaneous business.
XI. Reading of the minutes of the session about to conclude.
XII. Adjournment.

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AMENDMENTS TO CONSTITUTION.

ARTICLE II, SECTION 4. Provided, that no physician be elected a member of this society from a county having a local society, unless he be a member of the same, or unless there be some special reason for his election.—[1872, Oct. 10th.]

ARTICLE IV, SECTION 1. Amended by striking out in the second line the words "second Wednesday in October," and inserting "second Wednesday in April," as the time for holding the annual meeting of the Society.

ARTICLE III, SECTION 4. Making it obligatory upon the Permanent Secretary to reside in Sacramento, striking out that clause requiring the meetings of the society to be held in Sacramento, leaving the choice of such place with each session of the association.—[1873, April 10th.]

ARTICLE IV, SECTION 1. Changing the time of meeting to the third Wednesday in April.—[1873, April 10th.]

ARTICLE VII, SECTION 3. Any member who shall fail to pay his annual dues for two consecutive years, unless absent from the State, or for other reasonable causes, shall be dropped from the roll of members, after having been notified by the Permanent Secretary of the forfeiture of his membership; and no member so dropped shall be reinstated in his membership until he shall have paid all arrears due by him.—[1874, April 21st.]

ARTICLE V, SECTION 14. That the Standing Committees shall constitute sections, after the manner of the American Medical Association, to whom all papers shall be referred upon the first day of the session, and who shall report to the society those papers that seem of sufficient interest for

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reference to the Committee on Publication; also those that seem of sufficient importance to be read before the society, by title, abstract, or in extenso, upon the second day of meeting.—[1874, April 21st.]

ARTICLE II, SECTION 4. After the word "Censors," add "by the exhibition of his diploma;" and after the word "election," add, "and no voucher or vouchers of any member or members shall be taken as satisfactory evidence of any applicant's qualification for membership."—[1875, April 19th.]

ARTICLE II, SECTION 4. "Shall be entitled to permanent membership," to read, "shall thereby become permanent members."—[1875, April 19th.]

ARTICLE III, SECTION 1. After the word "ballot," add "except Permanent Secretary."—[1877, April 18th.]

ARTICLE III, SECTION 4. After "them," add, "this officer shall not be subject to annual election, and shall not be removed except for cause shown."—[1877, April 18th.]

ARTICLE II, SECTION 6. After the word "the" be added "signature of the President and Permanent Secretary."—[1878, April 18th.]

ARTICLE II, SECTION 4. A license from the Board of Examiners of this society shall also be required of every candidate.—[1878, April 18th.]

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RESOLUTIONS RELATING TO THE GOVERNMENT OF THE SOCIETY.

Resolved, That a committee of three be appointed by the Chair, to secure the passage of an amendment to the laws organizing the State Board of Health, to enforce the registration of deaths, births, etc., to enable the Board of Health to secure more complete statistics in relation thereto.—[1870, Oct. 20th.]

Resolved, That a committee be appointed by the Chair, to present to this society, at its next meeting, any amendment which may be advisable, in their judgment, to the present law regulating the registration of births and deaths.—[1870, Oct. 20th.]

Resolved, That the fact of a doctor of medicine being engaged in the manufacture and sale of any secret or patent medicine, or in any way promoting the use of them, shall render him ineligible as a member of this society.—[1871, Oct. 12th.]

Resolved, As a sense of this society, that the subject of medical ethics should receive a larger share of attention in medical universities and colleges of the country, to the end that the true principles inculcated therein may be more thoroughly impressed upon the minds of the students, and, in consequence, more faithfully and scrupulously observed by them in their subsequent professional career.—[1871, Oct. 12th.]

Resolved, That the Board of Censors shall recommend no candidate for membership until he shall have presented his diploma or other evidence of being a graduate of a recognized school, and of good standing; and that no voucher

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of a single member shall be considered sufficient evidence of his qualifications.—[1871, Oct. 12th.]

The Secretary was instructed to notify the committees of their appointment as soon as made by the President; also, that the Chairman of each committee be requested to notify each member of said committee of his appointment.—[1872, Oct. 10th.]

Resolved, That the Committee on Revision of the Constitution and By-Laws be instructed to introduce into the code a law requiring the reading of the minutes of each session at the conclusion of the same.—[1873, Oct. 10th.]

Resolved, That a Permanent Secretary be elected for the society, who shall be paid for his services, and that an additional Assistant Secretary shall be appointed each year by the President at the place of the future meeting. The salary of the Permanent Secretary to be fixed by the vote of the society.—[1873, Oct. 10th.]

Resolved, That the Permanent Secretary be allowed a salary of one hundred dollars.—[1874, April 10th.]

Resolved, That the Chairman of the various Standing Committees hereafter present a synopsis of their several reports; the reading of which will be considered as fulfilling the provisions of the Constitution.—[1874, April 10th.]

Resolved, That the Publishing Committee be instructed to make out an alphabetical list of the members, together with their places of residence, for the society, and have the same published in the next volume of transactions.—[1874, April 10th.]

Resolved, That the President and Secretary be authorized to issue credentials to any member of this society who desires to attend the meeting of the American Medical Association as a delegate.—[1874, April 10th.]

Resolved, That the Secretary be authorized to issue credentials to any member of the society desirous of visiting any foreign medical association.—[1874, April 10th.]

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Resolved, That this society recognizes the diplomas of the Toland College, and places its graduates who are now members of this society, or who may hereafter apply for membership, on the same footing as the graduates of other regular schools.—[1875, April 21st.]

Resolved, That the original founders of the society are permanent members and liable to yearly dues, and that all members once admitted are liable to yearly dues, whether simply as a delegate or otherwise.—[1875, April 21st.]

Resolved, That a committee of five members be appointed for the purpose of promoting the organization of county or district societies.—[1875, April 21st.]

Resolved, That the San Francisco Medical Benevolent Society be and the same is hereby recognized as a local medical society within the meaning of the Constitution of the State Medical Society, which requires its members to belong to a local medical society, when there is one where they reside.—[1875, April 19th.]

On motion it was ordered that the actual expenses incurred by the Board of Examiners be paid by the Treasurer of the society.—[1875, April 19th.]

Resolved, That this society endorse the views of the President as to the importance of the creation of local Boards of Health in every incorporated city and town in the State; and recommend the invocation of legislative aid in the promotion of so desirable an object.—[1877, April 18th.]

Resolved, That the practice of making annual contracts with individuals or societies for medical attendance is not only derogatory to the dignity of the profession, but is an actual violation of the code of medical ethics adopted by the American Medical Association, as well as the code adopted by this society.—[1877, April 18th.]

Resolved further, That the name of any member of this association who shall hereafter make or renew a contract for annual medical attendance upon individuals or societies,

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shall be stricken from the roll of the same.—[1877, April 18th.]

It was ordered that the actual expenses incurred by the Board of Examiners of this society be paid by the Treasurer of the society; who shall also pay such expenses of litigation as may be deemed necessary and expedient in order to carry out the objects of the law under which they were elected.—[1877, April 18th.]

Resolved, That the Publication Committee be requested to insert in the proceedings, in a collective form, all the changes in the Constitution, and the resolutions relating to the government of the society, which have been adopted from time to time.—[1878, April 17th.]

Resolved, That the several local medical societies and Boards of Health throughout the State be requested to urge their respective city, county, and town authorities to establish ordinances or laws requiring all practitioners of medicine within the limits of their respective jurisdictions to report in writing to their respective Boards of Health, all cases of the more dangerous epidemic diseases coming under their professional observation.—[1878, April 17th.]

Resolved, That the Secretary of the Board of Examiners be instructed to communicate with the local medical societies, and urge that they prosecute violations of the medical law, and that they report progress from time to time to the Board of Examiners.—[1878, April 17th.]

Resolved, That this society appeal to all ministers of the gospel throughout the State, and urge them to use their influence in all proper and available ways, to discourage the inhuman, degrading, and extensively prevailing practice of feticide.—[1878, April 17th.]

Resolved, Whereas, in consequence of the silence of the profession, the regular practice of medicine is very generally characterized as *allopathy* by the secular press, by medical dogmatists and sectarians, and by the public at large, and the epithet, *allopath*, applied to its individual

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members through ignorance to a great extent that the name was introduced by Hahnemann to give distinction to his homœopathic dogmas; therefore,

Resolved, That we, the Medical Society of the State of California, in unison with the regular profession throughout the world, do hereby utterly repudiate the name of *allopath*, as applied to ourselves, or *allopathy*, as applied to our practice; the regular profession of medicine, knowing no sectarianism in medicine, practicing no exclusive dogma, or in any way restricting its legitimate members in the treatment of their patients, but, on the contrary, giving them the fullest latitude to use any remedy or any means whereby the welfare of the sick may be promoted, their health insured, or their lives prolonged.—[1879, April 16th.]

Resolved, That the Medical Society of the State of California respectfully request the American Medical Association, at its next annual meeting, to memorialize the Congress of the United States to pass a law requiring the proprietors of all patent or proprietary medicines, offered for sale in the United States of America, on and after July 1st, 1880, to accompany each bottle, box, and package of such medicines with a printed label or circular, plainly stating all the medicinal and other substances contained therein, and their relative proportions; or to adopt some form of legislation that will accomplish the purpose herein contemplated.—[1879, April 17th.]

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STANDING COMMITTEES

OF THE STATE MEDICAL SOCIETY FOR 1879-80.

ON PRACTICAL MEDICINE—James Simpson, San Francisco; C. K. Farley, Gilroy; E. T. Barber, Oakland; Benj. Cory, San Jose; C. A. Kirkpatrick, Redwood City.

ON SURGERY—Jas. Murphy, San Francisco; C. G. Kenyon, San Francisco; A. B. Caldwell, Marysville; C. E. Blake, San Francisco; J. S. Adams, Oakland.

ON OBSTETRICS—D. B. Dean, San Francisco; H. A. DuBois, San Rafael; M. B. Pond, Napa; C. H. Allen, Centerville; C. B. Bates, Santa Barbara.

ON HISTOLOGY AND MICROSCOPY—W. S. Thorne, San Jose; W. R. Cluness, Sacramento; H. Gibbons, Jr., San Francisco; R. A. McLean, San Francisco; H. S. Pike, Sanel.

ON MEDICAL TOPOGRAPHY, ENDEMICS, ETC.—Thos. Ross, Woodland; L. R. Webster, Grass Valley; A. Fine, Watsonville; V. Newmark, Benicia; M. S. McMahan, San Jose.

ON INDIGENOUS BOTANY—W. P. Gibbons, Alameda; J. N. Mussy, La Porte; H. Neal, Hollister; J. H. Crumpton, Lakeport; M. C. Parkinson, Antioch.

ON MENTAL DISEASES—F. L. Dozier, Napa; F. W. Hatch, Jr., Napa; Robt. Caldwell, San Jose; A. H. Agard, Oakland; J. H. Clark, Azura.

ON PUBLIC HYGIENE AND STATE MEDICINE—M. M. Chipman, San Jose; J. B. Trembley, Oakland; J. F. Montgomery, Sacramento; F. W. Todd, Stockton; N. Williams, Richland.

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ON MEDICAL EDUCATION—J. M. Briceland, Shasta; A. A. O'Neil, San Francisco; G. W. Davis, Chico; P. M. Lusson, San Jose; W. F. McNutt, San Francisco.

*ON PRIZE ESSAYS—Luke Robinson, Colusa; J. H. Carothers, Martinez; J. B. Cox, San Jose; F. C. Durant, Folsom; I. Oatman, Sacramento.

OF ARRANGEMENTS—R. H. Plummer, San Francisco; H. Gibbons, Jr., San Francisco; Jas. Simpson, San Francisco; A. Barkan, San Francisco; O. O. Burgess, San Francisco.

ON PUBLICATION—G. G. Tyrrell, Sacramento; F. W. Hatch, Sr., Sacramento; G. L. Simmons, Sacramento; A. B. Nixon, Sacramento; G. A. Shurtleff, Stockton.

SPECIAL COMMITTEES.

ON GYNÆCOLOGY—C. M. Bates, San Francisco; H. M. Fisk, San Francisco; Jas. F. Foulkes, Oakland; F. Delmont, Ventura; C. A. Buckel, Oakland.

ON OPHTHALMOLOGY—A. Martinache, San Francisco; A. M. Wilder, San Francisco; A. Barkan, San Francisco; A. P. Whittell, Sacramento; A. Jump, Downieville.

ON NECROLOGY—H. Gibbons, Sr., San Francisco; A. B. Stout, San Francisco; C. P. Chesley, San Francisco; E. B. Robertson, San Andreas; C. M. Fenn, San Diego.

ON DISEASES OF WOMEN AND CHILDREN—O. O. Burgess, San Francisco; E. P. Stone, Oakland; E. Grisselle, San Francisco; H. N. Rucker, Merced; A. R. Becker, Berkeley.

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* A prize of fifty dollars is offered for best Essay on any subject appertaining to Medical Science.

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CATALOGUE OF OFFICERS AND MEMBERS

OF THE

Medical Society of the State of California.

PRESIDENTS AND VICE PRESIDENTS OF THE STATE MEDICAL SOCIETY.

1856.

SACRAMENTO.

President,

B. F. Keene.....El Dorado.

Vice Presidents,

E. S. Cooper.....San Francisco.
S. Langdon.....San Joaquin.
D. W. C. Rice.....Yuba.
R. K. Reid.....San Joaquin.
F. W. Hatch.....Sacramento.

1857.

SACRAMENTO.

President,

H. Gibbons.....San Francisco.

Vice Presidents,

R. H. McDaniels.....Yuba.
O. Harvey.....El Dorado.
A. J. Spencer.....Santa Clara.
R. B. Ellis.....Sacramento.
A. B. Stout.....San Francisco.

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1858.

SAN FRANCISCO.

President,

A. B. Stout .....San Francisco.

Vice Presidents,

J. P. Whitney.....San Francisco.
C. N. Ege.....Yuba.
A. J. Sepncer.....San Jose.
I. E. Oatman.....Sacramento.
J. Morrison.....San Francisco.

1859.

SACRAMENTO.

President,

R. B. Ellis.....San Francisco.

Vice Presidents,

J. F. McLane.....Yuba.
H. W. Harkness.....Sacramento.
O. Harvey.....El Dorado.
W. G. Deal.....Alameda.
J. F. Montgomery .....Sacramento.

1860.

President,

Isaac Rowell.....San Francisco.

Vice Presidents,

Isaac S. Titus.....El Dorado.
C. A. Kirkpatrick.....Solano.
R. B. Cole.....San Francisco.
Ira E. Oatman.....Sacramento.

Corresponding Secretary.

*E. S. Cooper.....San Francisco.

*Dr. Cooper was also elected one of the Vice Presidents, but declined—preferring the position of Corresponding Secretary.

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Recording Secretaries.

G. Taylor.....Sacramento.
G. L. Simmons.....Sacramento.

Treasurer,

H. W. Harkness .....Sacramento.

1861.

President,

Samuel F. Hamm.....El Dorado.

Vice Presidents,

B. H. Pierson .....Sacramento.
G. L. Simmons.....Sacramento.
C. A. Kirkpatrick.....Solano.
B. A. Sheldon.....San Francisco.
J. G. Tucker.....San Francisco.

Corresponding Secretary,

E. S. Cooper.....San Francisco.

Recording Secretaries,

G. Taylor.....Sacramento.
Isaac S. Titus.....El Dorado.

Treasurer,

H. W. Harkness.....Sacramento.

1870.

SAN FRANCISCO.

[Reorganization of State Medical Society.]

President,

T. M. Logan .....Sacramento.

Vice Presidents,

S. R. Harris .....San Francisco.
T. H. Pinkerton .....Alameda.
J. L. Ord .....Santa Barbara.
G. A. Shurtleff.....San Joaquin.
D. B. Hoffman.....San Diego.

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1871.

SACRAMENTO.

President,

H. Gibbons, Sr.....San Francisco.

Vice Presidents,

G. A. Shurtleff.....San Joaquin.
F. W. Hatch.....Sacramento.
F. W. Todd.....San Joaquin.
J. F. Montgomery .....Sacramento.

1872.

OAKLAND.

President,

G. A. Shurtleff.....San Joaquin.

Vice Presidents,

T. H. Pinkerton.....Alameda.
J. J. Franklin .....Sonora.
W. F. Cheney.....Butte.
W. F. Hays .....San Luis Obispo.

1873.

SACRAMENTO.

President,

T. H. Pinkerton .....Alameda.

Vice Presidents,

J. M. Brown.....Solano.
C. A. Kirkpatrick.....San Mateo.
F. W. Hatch.....Sacramento.
H. M. Briggs.....Santa Barbara.

Permanent Secretary,

G. G. Tyrrell.....Sacramento.

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1874-5.

SAN FRANCISCO.

President,

J. M. Brown, U. S. N.....Solano.

Vice Presidents,

A. B. Nixon.....Sacramento.
W. F. Cheney.....Butte.
Martin Baker.....Tulare.
R. K. Reid.....San Joaquin.

Permanent Secretary,

G. G. Tyrrell.....Sacramento.

1875-6.

SAN FRANCISCO.

President,

A. B. Nixon.....Sacramento.

Vice Presidents,

W. F. Cheney.....Butte.
H. H. Toland.....San Francisco.
W. R. Cluness.....Sacramento.
H. S. Orme.....Los Angeles.

Permanent Secretary,

G. G. Tyrrell.....Sacramento.

1876-7.

SAN FRANCISCO.

President,

Wm. Fitch Cheney.....Chico.

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Vice Presidents,

B. D. Dean .....San Francisco.
N. S. Hamlin.....Yuba City.
M. B. Pond.....Napa.
F. W. Todd.....Stockton.

Permanent Secretary,

G. G. Tyrrell.....Sacramento.

1877-8.

SAN JOSE.

President,

Washington Ayer.....San Francisco.

Vice Presidents,

L. C. Lane.....San Francisco.
A. W. Saxe.....Santa Clara.
J. M. Briceland .....Shasta.
Thomas Ross.....Woodland.

Permanent Secretary,

G. G. Tyrrell.....Sacramento.

1878-9.

SAN FRANCISCO.

President,

H. S. Orme.....Los Angeles.

Vice Presidents,

A. W. Saxe .....Santa Clara.
J. M. Briceland.....Shasta.
James Simpson.....San Francisco.
G. L. Simmons .....Sacramento.

Permanent Secretary,

G. G. Tyrrell.....Sacramento.

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1879-80.

SAN FRANCISCO.

President.

A. W. Saxe.....Santa Clara.

Vice Presidents.

F. W. Todd.....Stockton.
J. M. Briceland.....Shasta.
C. G. Kenyon.....San Francisco.
W. A. Washington.....Merced.

Permanent Secretary.

G. G. Tyrrell.....Sacramento.

Assistant Secretaries.

Thos. Ross.....Woodland.
F. W. Hatch, Jr.....Napa.

Treasurer.

Ira E. Oatman.....Sacramento.

Board of Censors.

C. N. Ellinwood.....San Francisco.
C. E. Blake.....San Francisco.
P. Wheeler.....Oakland.
G. L. Simmons.....Sacramento.
C. A. Kirkpatrick.....Redwood City.

State Board of Examiners.

C. M. Bates.....San Francisco.
H. Gibbons, Jr.....San Francisco.
C. Cushing.....Oakland.
R. H. Plummer.....San Francisco.
Jas. Simpson.....San Francisco.
W. Ayer.....San Francisco.
A. H. Agard.....Oakland.

Alternates.

G. A. Shurtleff.....Stockton.
H. N. Rucker.....Merced.
Thos. Kelly.....San Jose.

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ORDINARY MEMBERS.

[Those who have an obelisk (†) prefixed to their names are dead.]

Adams, J. S.....Oakland.
Agard, A. H.....Oakland.
Allen, C. H.....Centreville.
Anthony, A. G.....Oakland.
Ayer, W.....San Francisco.
†Babcock, H. P.....Oakland.
Baker, Martin.....Visalia.
Baldwin, H. S.....San Francisco.
Bamford, Wm.....East Oakland.
Barber, E. T.....Oakland.
Bard, C. L.....San Francisco.
Barkan, A.....San Francisco.
Bates, C. B.....Santa Barbara.
Bates, C. M.....San Francisco.
Becker, A. R.....Berkeley.
Belinge, F. A. A.....San Francisco.
Bell, W. T.....Winters.
Blake, C. E.....San Francisco.
Blake, Jas. W.....San Francisco.
Briceland, J. M.....Shasta.
Briggs, H. H.....Sacramento.
Brigham, C. B.....San Francisco.
Brinkerhoff, S. B.....Santa Barbara.
Brown, C. Blake.....San Francisco.
Brown, J. M., U. S. N.....Mare Island.
†Brown, James A.....Sutter Creek.
Brownell, E. A. V.....Los Angeles.
Bruner, W. H.....San Francisco.
Buckel, C. Annette.....Oakland.
Bucknall, G. J.....San Francisco.

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Bucknell, M. E.....San Francisco.
Burdick, J. L.....Oakland.
Burgess, O. O.....San Francisco.
Cachot, W. A.....San Francisco.
Caldwell, A. B.....Marysville.
†Caldwell, A. B.....Santa Clara.
Caldwell, Robert.....San Jose.
†Campbell, S. D.....Suisun.
Carothers, J. H.....Martinez.
Carr, E. S.....Oakland.
†Chamberlin, P.....San Francisco.
†Chase, George C.....Downieville.
Cheney, William Fitch.....Chico.
Chesley, C. P.....San Francisco.
Chipman, M. M.....San Jose.
Chismore, George.....San Francisco.
Christie, J. B.....Petaluma.
Clárk, Asa.....Stockton.
Clark, J. H.....Azusa.
Clark, B. F.....Chico.
Cluness, W. R.....Sacramento.
Cochrane, A. H.....San Jose.
Cole, R. Beverly.....San Francisco.
Coleman, C. S.....San Leandro.
Coleman, F. W.....Napa.
Cory, Benjamin.....San Jose.
Cox, J. B.....San Jose.
Crane, J. H.....Petaluma.
†Crook, John T.....San Francisco.
Crumpton, H. J.....Lakeport.
Curless, Wm.....Truckee.
Curran, M. K.....San Francisco.
†Curtis, E. M.....Sacramento.
Cushing, Clinton.....Oakland.
Davis, G. W.....Chico.
Dean, Benjamin D.....San Francisco.
Delmont, F.....Ventura.
Dennis, S. W.....San Francisco.

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DeWitt, Thos. B.....San Francisco.
Dozier, Franklin L.....Napa.
Dubois, A. S.....San Leandro.
DuBois, H. A.....San Rafael.
Durant, F. C.....Folsom.
Dutton, G. W.....Tomales.
Ellinwood, C. N.....San Francisco.
Farley, C. K.....Gilroy.
Fenn, C. M.....San Diego.
Ferrer, H.....San Francisco.
Fine, A.....Watsonville.
Fiske, Henry M.....San Francisco.
Fiske, H. W.....Quincy.
Flint, Joseph.....Tehama.
Follingsbee, E. A.....San Francisco.
Foley, W. L.....Oroville.
Foote, Erastus N.....Lockford.
Foulkes, J. F.....Oakland.
†Franklin, J. J.....Sonora.
Freeman, G. M.....Visalia.
Gardner, Mathew.....Davisville.
†Gates, H. S.....San Francisco.
Gibbons, Henry.....San Francisco.
Gibbons, Henry, Jr.....San Francisco.
Gibbons, Wm. P.....Alameda.
Gordon, E. A.....Dixon.
Grady, J. F.....Weaverville.
Green, T.....San Francisco.
Grisselle, Eliza.....San Francisco.
Grover, W. A.....San Francisco.
Hamlin, N. S.....Yuba City.
Hanson, Thomas C.....Winnemucca.
Hardy, B. F.....San Francisco.
Harris, E. B.....Virginia City.
†Harris, S. R.....San Francisco.
Harvey, O.....Galt.
†Harville, J. W.....San Francisco.
Hatch, F. W.....Sacramento.

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Hatch, F. W., Jr.....Napa.
Hewston, George.....San Francisco.
Hirschfelder, J. O.....San Francisco.
Hodgdon, W. H. A.....San Francisco.
Holmes, Stillman.....Santa Cruz.
Hopkins, A. St. George L.....Oakland.
Huber, David.....Gilroy.
Hudson, A. S.....Stockton.
Hunt, R.....Nevada City.
Jackson, G. H.....Woodland.
Jackson, J. S.....Chico.
Jenkins, T. J.....San Jose.
Jones, William C.....Grass Valley.
Jump, Alemby.....Downieville.
Keane, G. B.....San Francisco.
Kelly, Thos.....San Jose.
Kenyon, C. G.....San Francisco.
Kesseler, A.....Volcano.
Kier, H. M.....Knight's Land'g.
Kirkpatrick, C. A.....Redwood City.
Lane, L. C.....San Francisco.
†Lasvignes, L.....Forest City.
†Logan, Thomas M.....Sacramento.
Lovelace, L. M.....Le Moore.
Leffler, John.....Pacheco.
Lucas, W. T.....Woodland.
Lusson, P. M.....San Jose.
Mackintosh, Robt.....San Francisco.
Markell, R. S.....Cacheville.
Martinache, N. J.....San Francisco.
Martineaut, E. D.....San Francisco.
Matson, E. A.....Stockton.
McLean, R. A.....San Francisco.
McMahan, M. S.....San Jose.
McMahan, John B.....San Jose.
McNutt, W. F.....San Francisco.
McQuesten, Chas.....San Francisco.
Mead, E. S.....San Jose.

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Meares, J. L.....San Francisco.
†Mehring, A. B.....Visalia.
Miller, Chas. F.....Hill's Ferry.
Miller, P. B. McD.....Oroville.
†Millington, Jno.....San Francisco.
Montgomery, J. F.....Sacramento.
†Morse, Jno. F.....San Francisco.
Murphy, James.....San Francisco.
Murphy, R. W.....San Francisco.
Mussey, J. M.....La Porte.
Neal, H.....Hollister.
Nelson, H. W.....Sacramento.
Newmark, V.....Benicia.
Nichell, C. F. A.....Napa.
Nichols, H. L.....San Francisco.
Nixon, A. B.....Sacramento.
Oatman, Ira E.....Sacramento.
O'Neil, A. A.....San Francisco.
O'Toole, M.....San Francisco.
Orme, H. S.....Los Angeles.
Pardee, E. H.....Oakland.
Parkinson, M. C.....Antioch.
Parramore, E. L.....Woodland.
Paugh, W. J.....San Francisco.
Pawlicki, L.....San Francisco.
Payne, F. H.....Berkeley.
Pelham, J. E.....San Quentin.
Pietrzycki, M.....Rio Vista.
Pike, H. G.....Sanel.
Pinkerton, T. H.....Oakland.
Plummer, R. H.....San Francisco.
Powell, D.....Marysville.
Powers, G. H.....San Francisco.
Pond, M. B.....Napa.
Pratt, A. H.....Dixon.
Regensberger, A. E.....San Francisco.
Reid, R. K.....Stockton.
Reilay, John P.....Oakland.

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Reinhart, M.....Berkeley.
Reynolds, G. P.....Alameda.
Robertson, E. B.....San Andreas.
Robertson, H. D.....Oakland.
Robinson, Luke.....Colusa.
Rodgers, L. O.....San Francisco.
Rogers, S. J. S.....Marysville.
Rogers, George H.....San Francisco.
Ross, Thos.....Woodland.
Rowell, Chas.....San Francisco.
Rucker, Hiram N.....Merced.
Ruggles, Chas. A.....Stockton.
Rupe, S. H.....Healdsburg.
Russell, W. A.....Visalia.
†Sage, C. T.....San Francisco.
Saxe, A. W.....Santa Clara.
Scott, Jno.....San Francisco.
Shafter, J. C.....Olema.
Shuey, Sarah I.....Berkeley.
Shurtleff, Benjamin.....Napa.
Shurtleff, G. A.....Stockton.
Simmons, G. L.....Sacramento.
Simonton, W. B.....Oakland.
Simpson, Jas.....San Francisco.
Smith, L. E.....La Porte.
Smith, W. F.....San Francisco.
Smith, Q. C.....Cloverdale.
Snider, T. A.....Sacramento.
Spillane, Jas.....San Francisco.
†Sproule, Samuel F.....Chico.
Stockton, E. A.....Stockton.
Stone, E. P.....Oakland.
Stout, A. B.....San Francisco.
Strong, A.....Woodland.
Sullavan, James F.....San Francisco.
Swan, Benj. R.....San Francisco.
†Thorndyke, A.....Stockton.
Thorne, W. S.....San Jose.

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†Tilden, T. W.....Chico.
Titus, I. S.....San Francisco.
Todd, T. M.....Auburn.
Todd, F. W.....Stockton.
Toland, H. H.....San Francisco.
Tonner, J. A.....San Francisco.
Trembley, J. B.....Oakland.
Twitchell, W. L.....San Francisco.
Tyrrell, G. G.....Sacramento.
Van Vlack, G. J.....San Francisco.
†Van Wyck, John C.....Oakland.
Wagner, John.....San Francisco.
Walker, D.....Martinez.
Wanzer, L. M. F.....San Francisco.
Washington, W. A.....Merced.
†Wayman, W. G.....San Francisco.
Webster, L. R.....Grass Valley.
Wells, J. T.....Bakersfield.
Wells, W. H.....Dixon.
Wheeler, P.....Oakland.
White, G. A.....Sacramento.
Whittell, A. P.....Sacramento.
Wilder, A. M.....San Francisco.
Wilkins, E. T.....Napa.
Willey, John M.....San Francisco.
Williams, N.....Richland.
Woolsey, E. H.....Oakland.
Worthington, H.....Los Angeles.
Wythe, W. T.....San Francisco.
Younger, W. J.....San Francisco.

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HONORARY MEMBERS.

Joseph Hyrtle.....Vienna, Austria.
Charles A. Cameron.....Dublin, Ireland.
†Professor Louis Agassiz.....Massachusetts.
S. W. Thayer.....Vermont.
J. H. Wythe.....Oakland, Cal.
John Le Conte.....Oakland, Cal.
Joseph Le Conte.....Oakland, Cal.
A. Ames.....Boston, Mass.
S. M. Tibbitts.....San Francisco.
P. Landsdale.....United States Navy.
David Kindleberger.....United States Navy.
W. E. Taylor.....United States Navy.
S. F. Shaw.....United States Navy.
W. M. Nickerson.....United States Navy.
G. Farwell.....United States Navy.
C. McCormick.....United States Army.
R. Murray.....United States Army.
C. C. Keeney.....United States Army.
E. Bently.....United States Army.
F. Tallon.....United States Army.

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